Energy and Water Development: FY2007 Appropriations

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Summary

The Energy and Water Development appropriations bill in the past included funding for civil works projects of the Army Corps of Engineers (Corps), the Department of the Interior's Bureau of Reclamation (BOR), most of the Department of Energy (DOE), and a number of independent agencies. For FY2006, the Congress reorganized the appropriations subcommittees and the content of the various appropriations bills to be introduced. In the case of Energy and Water Development, the only changes were the consolidation of DOE programs that had previously been funded by the Interior and Related Agencies bill. That organization was followed by the Administration in submitting its FY2007 budget request in February 2006.

Key budgetary issues involving these programs include

- the need to balance efforts by the Army Corps of Engineers to prevent storm damage in Louisiana with the rest of the agency's portfolio of authorized projects (Title I);
- support of major ecosystem restoration initiatives, such as Florida Everglades (Title I) and California "Bay-Delta" (CALFED) (Title II);
- funding for the proposed national nuclear waste repository at Yucca Mountain, Nevada, and proposals to store nuclear spent fuel temporarily (Title III: Nuclear Waste Disposal); and
- the Administration's proposed Global Nuclear Energy Partnership to supply plutonium-based fuel to other nations (Title III: Nuclear Energy).

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The Bush Administration's FY2007 budget request was released in February 2006. The request followed the reorganization of appropriations subcommittees in 2005, in which the Energy and Water Development appropriations bill acquired Department of Energy (DOE) programs that previously had been included in the appropriations bill for Interior and Related Agencies. Including these programs, the requested amount for FY2007 Energy and Water Development totaled $29.45 billion. For FY2006, $36.73 billion was appropriated for comparable programs (including $6.6 billion in emergency supplemental appropriations for the Corps of Engineers).

The House Appropriations Subcommittee on Energy and Water Development marked up an FY2007 appropriations bill May 11, and the full committee approved the bill (H.R. 5427, H.Rept. 109-474) May 17. The House passed the measure May 24.

The Senate Appropriations Subcommittee on Energy and Water Development approved its version of H.R. 5427 on June 27, and the full committee reported it out June 29 (S.Rept. 109-274). The Senate did not act on the bill in 2006.

Energy and Water Development programs were funded for FY2007 in the Revised Continuing Appropriations Resolution, 2007 (H.J.Res. 20, P.L. 110-5). On March 16, 2007, DOE submitted its "operating plan" to Congress, detailing funding for individual programs not specifically identified in P.L. 110-5.

Status

Table 1. Status of Energy and Water Development Appropriations, FY2007

Subcommittee Markup		House Report	House Passage	Senate Report	Senate Passage	Cont. Res.	Cont. Resolution Approval		Public Law
House	Senate						House	Senate	
5/11/06	6/27/06	H.Rept. 109-474	5/24/06	S.Rept. 109-274	—	H.J.Res. 20	1/31/07	2/14/07	P.L. 110-5 2/15/07

Overview

The Energy and Water Development bill has historically included funding for civil works projects of the U.S. Army Corps of Engineers (Corps), the Department of the Interior's Bureau of Reclamation (BOR), most of DOE, and a number of independent agencies, including the Nuclear Regulatory Commission (NRC) and the Appalachian Regional Commission (ARC). With the reorganization of the appropriations subcommittees in 2005, DOE programs that had been funded in the Interior and Related Agencies bill were transferred to the Energy and Water Development bill. The Bush Administration's FY2007 request was $29.455 billion for all of the programs now included in the Energy and Water bill, compared with $36.726 billion appropriated for FY2006, including $6.6 billion in emergency funding for the Corps of Engineers following the Katrina hurricane disaster.

H.R. 5427, as passed by the House May 24, 2006, would have appropriated $30.017 billion for Energy and Water Development programs, $546 million more than the requested amount. The Senate version of H.R. 5427, as reported by the Senate Appropriations Committee, would have

appropriated $31.238 billion. The Continuing Resolution (P.L. 110-5) appropriated $30.265 billion.

Table 2 includes budget totals for energy and water development appropriations enacted for FY2000 to FY2006 and the requested amount for FY2007.

Table 2. Energy and Water Development Appropriations, FY2000 to FY2007

(budget authority in billions of current dollars)

FY00	FY01	FY02	FY03	FY04	FY05	FY06	FY07*
21.2	23.9	25.2	26.1	26.7	30.2[a]	36.7[ab]	29.4[a]

Note: These figures represent current dollars, exclude permanent budget authorities, and reflect rescissions.

* Request

a. Includes DOE programs transferred from Interior and Related Agencies appropriations bill.

b. Includes $6.6 billion in emergency funding for the Corps of Engineers.

Table 3 lists totals for each of the four titles. It also lists several "scorekeeping" adjustments of accounts within the four titles, reflecting various expenditures or sources of revenue besides appropriated funds. These adjustments affect the total amount appropriated in the bill but are not included in the totals of the individual titles. Amounts listed in this report are derived from the Administration's FY2007 Congressional Budget Requests, from H.Rept. 109-474, from S.Rept. 109-274, and from P.L. 110-5. For Title III, some figures from DOE's FY2007 Operating Plan were used.

Table 3. Energy and Water Development Appropriations Summary

($ millions)

Title	FY2006	FY2007 Request	House	Senate	P.L. 110-5
Title I: Corps of Engineers	$11,914.6*	$4,733.0	$4,983.8	$5,139.4	$5,340.2
Title II: CUP & BOR	1,054.8	923.8	941.0	1,067.3	1,054.7
Title III: Department of Energy	24,046.8	24,074.8	24,373.5	24,725.1	24,093.2
Title IV: Independent Agencies	268.4	248.8	227.8	306.3	306.0
E&W Subtotal	**37,299.6**	**29,980.4**	**30,526.1**	**30,170.9**	**30,794.1**
Scorekeeping Adjustments					
Undistributed Pay Raise					33.0
Title II					
Central Valley	(43.9)	(33.8)	NA	NA	(44.0)
Title III					
Colorado River Basins, WAPA	(23.0)	(23.0)	NA	NA	(23.0)
Uranium Fund	(446.5)	(452.0)	NA	NA	(446.0)
Excess Fees FERC	(15.5)	(16.4)	NA	NA	(19.2)
E&W Total	**36,725.7**	**29,455.2**	**30,017.0**	**31,238.0**	**30,294.9**

Source: Administration FY2007 budget request, H.Rept. 109-474, S.Rept. 109-274, P.L. 110-5.

Note: Details may not add to totals due to rounding. NA: Not available.

* Includes $6.6 billion emergency supplemental funding. See **Table 4** for details.

For the FY2007 Corps of Engineers budget, the Administration requested $4.733 billion, a decrease of $0.595 billion from the enacted appropriation for FY2006 (not including emergency supplementals). The House-passed bill would have appropriated $4.984 billion. The Senate Appropriations Committee recommended $5.139 billion. P.L. 110-5 appropriated $5.239 billion. The Administration asked for $923.8 million for FY2007 for the Department of the Interior (DOI) programs included in the Energy and Water Development bill: the Bureau of Reclamation and the Central Utah Project. This would be have been a decrease of $131 million from the FY2006 funding level. The House bill would have appropriated $941.0 million. The Senate Appropriations Committee recommendation was $1.0673 billion. P.L. 110-5 appropriated $1.011 billion.

The FY2007 request for DOE programs was $24.075 billion, approximately the same amount appropriated for the previous year. The major activities in the DOE budget are energy research and development, general science, environmental cleanup, and nuclear weapons programs. Also included in the DOE total is funding of DOE's programs for fossil fuels, energy efficiency, and energy statistics, which had historically been included in the Interior and Related Agencies appropriations bill. The House bill would have funded these programs at $24.374 billion. The Senate Appropriations Committee recommended $24.725 billion. P.L. 110-5 appropriated $23.617 billion.

The FY2007 request for funding of the independent agencies in Title IV of the bill was $249 million, compared with $268 million appropriated for FY2006. The House bill would have appropriated $228 million. The Senate Appropriations Committee recommended $306 million. P.L. 110-5 appropriated $306 million.

Tables 4 through 15 provide budget details for Title I (Corps of Engineers), Title II (Department of the Interior), Title III (Department of Energy), and Title IV (independent agencies) for FY2005-FY2006.

Title I: Army Corps of Engineers

Under P.L. 110-5, the FY2007 Energy and Water Development appropriations for the Corps is $5,340.2 million, which is close to the enacted amount for FY2006 (not including supplemental funds). Bill language specified the total amount for the Corps' various civil works budget accounts. Guidelines to the agency for how to distribute each account's funds across the hundreds of Corps projects usually are laid out in congressional reports accompanying appropriations bills, with funding for only 10 to 30 projects, on average, specified in bill language. P.L. 110-5 eliminated the provisions in the FY2006 bill language related to funding of specific projects; the reports accompanying P.L. 110-5 did not provide guidance on how to distribute each account's money across the portfolio of Corps-authorized projects. Consequently, the Administration had greater flexibility and discretion on how much to allocate to authorized projects in FY2007 than it has had in most fiscal years. Reprogramming and contracting restrictions enacted with the FY2006 appropriations, P.L. 109-103, continue into FY2007 under P.L. 110-5.

The Corps reported its FY2007 work plan to the Appropriations Committees on March 19, 2007. The work plan was developed so that generally only projects that received money in FY2006 were funded, and generally the Administration's FY2007 budget request was the basis for the amounts allocated to projects.

Table 4. Energy and Water Development Appropriations
Title I: Army Corps of Engineers

($ millions)

Program	FY2006 Approp. P.L. 109-103	FY2006 Approp. Emerg. Funding[a]	FY2006 Approp. Total[a]	FY2007 Request	House	Senate	P.L. 110-5
Investigations and Planning	$162.4	$40.6	$203.0	$94.0	$128.0	$168.5	$162.9
Construction, including rescission	2,348.3	650.8	2,999.1	1,555.0	1,891.1	1,986.4	2,336.5
Flood Control, Mississippi River	396.0	153.8	549.8	278.0	290.6	450.5	396.6
Operation and Maintenance (O&M)	1,969.1	330.7	2,299.8	2,258.0	2,195.5	2,030.0	1,975.1
Regulatory	158.4	—	158.0	173.0	173.0	168.0	159.3
General Expenses	152.5	—	152.5	164.0	142.1	164.0	167.2
FUSRAP[b]	138.6	—	138.6	130.0	130.0	140.0	138.7
Flood Control and Coastal Emergencies	—	5,408.0	5,408.0	81.0	32.0	32.0	—
Office of the Asst. Secretary of the Army	4.0	1.6	5.6	—	1.5	0.0	4.0
Total Title I	**5,329.2**	**6,585.5**	**11,914.6**	**4,733.0**	**4,983.8**	**5,139.4**	**5,340.2**

Source: FY2007 Budget Request; H.Rept. 109-474: S.Rept. 109-274; P.L. 110-5; Army Corps of Engineers Civil Works: FY2007 Work Plan (March 19, 2007).

a. The Defense Appropriations Act for FY2006 (P.L. 109-148) reallocated FY2005 emergency supplement funds to the Corps' civil works program. Also includes funding from P.L. 109-234.

b. "Formerly Utilized Sites Remedial Action Program."

Key Policy Issues—Corps of Engineers

Project Backlog and Agency Priorities

P.L. 110-5 did not address the ongoing appropriations policy debate about how to structure the agency's budget and priorities. The Corps civil works program has been criticized by some observers as an agglomeration of projects with no underlying design. These observers see the Corps' backlog of authorized activities as an example of this lack of focus. Estimates of the

backlog's size vary from $11 billion to more than $50 billion, depending on which projects are included. Although some observers view the backlog as nothing more than a Corps "to do" list, others are concerned that projects in the backlog face construction delays and related cost overruns as available appropriations are spread across an increasing portfolio of projects.

The Corps' backlog of authorized projects and concerns about the fiscal planning and management of the agency's portfolio contribute to support for performance-based criteria for structuring the agency's budget and for concentrated appropriations on a small set of priority projects. Others also express concerns about the agency's fiscal planning and management, yet reject both the use of performance-based criteria that have been proposed and the focus on 8 to 10 priority projects. These critics argue that the criteria used are too simplistic and that basing the Corps' budget on performance criteria does not produce an integrated multiyear program for the agency. They also argue that the focus on priority projects has resulted in a disproportionate amount of the agency's budget being concentrated on a few projects, resulting in less investment in other authorized, cost-beneficial projects and in those regions of the country that do not have priority projects.

Everglades

The Corps plays a significant coordination role in the restoration of the Central and Southern Florida ecosystem. The agency's FY2007 workplan provided the $164 million sought for Everglades restoration activities by the Administration in its FY2007 budget request—Central and Southern Florida Project ($91 million), Kissimmee River Restoration Project ($34 million), Everglades and South Florida Restoration Projects ($4 million), and Modified Water Deliveries Project ($35 million).[1] This is an increase from the $137 million appropriated for Corps Everglades restoration projects in FY2006. The FY2007 work plan also provided $3 million for the Florida Keys Everglades Improvement project, a project that had received funding in FY2006 but was not part of the FY2007 budget request.

Hurricane Katrina Repairs and Coastal Louisiana Restoration

The Corps is responsible for much of the repair and fortification of the hurricane protection system of coastal Louisiana, particularly in the greater New Orleans area; to date, most of the Corps' work on the region's hurricane protection system has been funded through FY2006 emergency supplemental appropriations, as shown in **Table 4**. The Corps also received $400 million for these activities through FY2005 supplemental appropriations. The vast majority of the enacted and requested supplemental appropriations for the region is for structural hurricane defenses; coastal wetlands restoration activities by the Corps have received less than $200 million of the enacted Katrina appropriations. For more information on the FY2006 supplemental appropriations for Louisiana, see CRS Report RL33298, *FY2006 Supplemental Appropriations: Iraq and Other International Activities; Additional Hurricane Katrina Relief*, by Paul M. Irwin et al.

Title II: Department of the Interior

The Department of the Interior initially requested that Congress provide an increase in funding for the Central Utah Project Completion Account and reduction for the Bureau of Reclamation

[1] For more information on the Modified Water Deliveries Project, see CRS Report RS21331, *Everglades Restoration: Modified Water Deliveries Project*, by Pervaze A. Sheikh.

(BOR) for FY2007; however, the final FY2007 funding level is the same as that enacted for FY2006.

Table 5. Energy and Water Development Appropriations
Title II: Central Utah Project Completion Account

($ millions)

Program	FY2006	FY2007 Request	House	Senate	P.L. 110-5
Central Utah Project Construction	$31.4	$37.6	$37.6	$37.6	$31.4
Mitigation and Conservation Activities	0.9	1.0	1.0	1.0	0.9
Oversight & Administration	1.7	1.6	1.6	1.6	1.7
Total, Central Utah Project	**34.0**	**40.2**	**40.2**	**40.2**	**34.0**

Source: Central Utah Project Completion Act, FY2007 Budget Justification; H.Rept. 109-474; S.Rept. 109-274; P.L. 110-5.

Note: Details may not add to totals due to rounding.

Table 6. Energy and Water Development Appropriations
Title II: Bureau of Reclamation

($ millions)

Program	FY2006	FY2007 Request	House	Senate	P.L. 110-5
Water and Related Resources	$874.7	$833.4	$849.1	$889.0	$874.7
Desert Terminal Lakes Rescission	—	(88.0)	(88.0)	0.0	—
Policy & Administration	57.3	58.1	58.1	58.1	57.3
CVP Restoration Fund (CVPRF)[a]	52.1	41.5	41.5	41.5	52.1
Calif. Bay-Delta (CALFED)	36.6	38.6	40.1	38.6	36.6
Gross Current Authority	**1,020.7**	**883.6**	**900.8**	**1,027.2**	**1,020.7**
CVP Collections[a]	(43.9)	(33.8)	(33.8)	(33.8)	(43.9)
Net Current Authority	**976.8**	**849.8**	**867.0**	**993.4**	**976.8**
Total, Title II	**1,054.7**	**923.8**	**941.0**	**1,067.3**	**1,054.7**

Source: Bureau of Reclamation FY2007 Budget Justification; H.Rept. 109-474; S.Rept. 109-274; P.L. 110-5.

a. In its request, the Reclamation lists CVP Collections as an "offset." Congress does not follow this procedure.

Central Utah Project and Bureau of Reclamation: Budget In Brief

The Administration requested $40.2 million for the Central Utah Project (CUP) Completion Account for FY2007. Final FY2007 funding of the CUP remains at the $34.0 million FY2006 level. The FY2007 request for the Bureau of Reclamation (BOR) totaled $833.6 million in gross current budget authority, including a rescission of $88 million for the Desert Terminal Lakes. This amount is $137.1 million less than enacted for FY2006. The FY2007 request included "offsets" of $33.8 million for the Central Valley Project (CVP) Restoration Fund, yielding a "net" current

authority of $849.8 million for BOR. BOR has been funded at the FY2006 level for FY2007, with the total for Title II funding at $1.05 billion.

BOR's single largest account, Water and Related Resources, encompasses the agency's traditional programs and projects, including construction, operations and maintenance, the Dam Safety Program, Water and Energy Management Development, and Fish and Wildlife Management and Development, among others. The Administration requested $833.4 million for the Water and Related Resources Account for FY2007. This amount is $41.3 million (4.7%) less than enacted for FY2006. The FY2006 enacted funding level of $874.7 million is retained for FY2007.

The House Appropriations Committee made recommendations to provide $17 million more for BOR programs than the President's request. The Central Utah project, Central Valley Project, and Policy and Administration were funded as requested. The Committee recommended that the Water and Related Resources be funded at a level $15.7 million higher than the FY2007 request. The California Bay-Delta Restoration project also saw a recommended increase for FY2007 of $1.5 million.

The Senate Appropriations Committee recommended funding BOR Title II programs at a level $109.8 million more than the President's request and $92.6 million more than the House recommendations. The Central Utah Project, Central Valley Project, and Policy and Administration were funded as requested by the President and as recommended by the House. The California Bay-Delta Restoration project was funded at the level requested by the President, but $1.5 million lower than the House. The Committee recommended that Water and Related Resources be funded at a level $55.6 million higher than the Administration's FY2007 request, and $39.9 million more than the House provided. The Senate had no Desert Terminal lakes rescission in its recommendations, this was -$88 million in the President's budget and House report.

The final continuing resolution (P.L. 110-5) appropriated the same amounts that were appropriated for FY2006.

Key Policy Issues—Bureau of Reclamation

Background

Most of the large dams and water diversion structures in the West were built by, or with the assistance of, the Bureau of Reclamation. Whereas the Army Corps of Engineers built hundreds of flood control and navigation projects, BOR's mission was to develop water supplies, primarily for irrigation to reclaim arid lands in the West. Today, BOR manages hundreds of dams and diversion projects, including more than 300 storage reservoirs in 17 western states. These projects provide water to approximately 10 million acres of farmland and 31 million people. BOR is the largest wholesale supplier of water in the 17 western states and the second-largest hydroelectric power producer in the nation. BOR facilities also provide substantial flood control, recreation, and fish and wildlife benefits. At the same time, operations of BOR facilities are often controversial, particularly for their effect on sensitive fish and wildlife species and conflicts among competing water users.

CALFED

The Administration requested $38.6 million for the California Bay-Delta Restoration Account (Bay-Delta, or CALFED) for FY2007. The bulk of the requested funds were targeted at three main program areas, including the Environmental Water Account, the Storage Program, and

conveyance. The remainder of the request was allocated for science, water quality, ecosystem restoration, planning and management, and water use efficiency. The House Appropriations Committee recommended funding CALFED at $1.5 million above the budget request and provided a detailed delineation of how it expects funding to be allocated within the program. The Senate Appropriations Committee recommended funding CALFED as requested by the Administration and $1.5 million less than the House. P.L. 110-5 provides the same as the FY2006 level, $36.6 million. (For more information on CALFED, see CRS Report RL31975, *CALFED Bay-Delta Program: Overview of Institutional and Water Use Issues*, by Pervaze A. Sheikh and Betsy A. Cody.)

Security

The Administration requested $39.6 million for site security for FY2007. This amount is comparable to that enacted for FY2006. The bulk of the request is for facility operations/security. Funding covers such activities as administration of the security program (e.g., surveillance and law enforcement), antiterrorism activities, and physical emergency security upgrades. P.L. 110-5 provides the same as the FY2006 level and the request, $39.6 million. (For more information, see CRS Report RL32189, *Terrorism and Security Issues Facing the Water Infrastructure Sector*, by Claudia Copeland.)

The FY2007 request assumes annual costs for guard and patrol activities will be treated as project O&M costs, and hence will be reimbursable based on project cost allocations. These costs are estimated to be $20.9 million in FY2007, of which $18.9 million is reimbursable. BOR will continue to treat facility fortification and antiterrorism management-related expenses as nonreimbursable.

Water 2025

The 2007 budget request for this program was $14.5 million, an increase of $9.5 million from FY2006. In 2007, the program plans to continue retrofitting and modernizing existing facilities aimed at water conservation. BOR also plans to introduce a grant program for System Optimization Reviews in FY2007. The House and Senate Appropriations Committees recommended funding Water 2025 at the level requested. P.L. 110-5 provides the same amount, $14.5 million.

Title III: Department of Energy

Until last year, the Energy and Water Development bill included funding for most, but not all, of DOE's programs; other DOE programs were funded in the Interior and Related Agencies bill. Major DOE activities historically funded by the Energy and Water bill include research and development on renewable energy and nuclear power, general science, environmental cleanup, and nuclear weapons programs.

The subcommittee reorganization of the appropriations committees last year transferred DOE's programs for fossil fuels, energy efficiency, the Strategic Petroleum Reserve, and energy statistics, formerly included in the Interior and Related Agencies appropriations bill, to the Energy and Water Development bill. Including the transferred programs, the total request for Title III for FY2007 was $24.0748 billion, slightly more than appropriated for FY2006 (excluding the adjustments noted in **Table 3**). The House-passed bill, H.R. 5427, would have appropriated $24.3735 billion. The Senate Appropriations Committee version of H.R. 5427 recommended $24.7251 billion. P.L. 110-5 appropriated $23.617 billion.

Table 7. Energy and Water Development Appropriations Title III: Department of Energy

($ millions)

Program	FY2006	FY2007 Request	House	Senate	P.L. 110-52
Energy Supply & Conservation					
Energy Efficiency & Renewables	$1,173.8	$1,176.4	$1,319.4	$1,385.5	$1,474.3
Electricity Delivery & Energy Reliability	161.9	124.9	144.0	135.0	*137.0*
Nuclear Energy	416.0	559.8	499.8	711.3	*618.2*
Environment, Safety, Health	27.7	29.1	29.1	29.1	*27.8*
Legacy Management	33.2	33.1	33.1	33.1	*33.2*
Adjustment1	—	—	—	—	*(135.0)*
Total, Energy Supply & Cons.	1,812.6	1,923.3	2,025.5	2,294.0	2,154.5
Fossil Energy R&D	592.0	469.7	558.2	644.3	*592.6*
Clean Coal Technology (Deferral)	(20.0)	—	—	(50.0)	—
Naval Petrol. & Oil Shale Reserves	21.3	18.8	18.8	39.8	*21.3*
Elk Hills School Lands Funds	84.0	—	—	—	—
Strategic Petroleum Reserve	207.3	155.4	155.4	155.4	*164.4*
Northeast Home Heating Oil Rsrv.	—	5.0	5.0	5.0	5.0
Strategic Petroleum Acct.	(43.0)	—	—	—	—
Energy Information Administration	85.3	89.8	89.8	93.0	90.7
Non-Defense Environmental Cleanup	349.7	310.4	309.9	310.4	*349.7*
Uranium Decontamination and Decommissioning Fund	556.6	579.4	579.4	573.4	*556.6*
Science					
High Energy Physics	716.7	775.1	775.1	766.8	*751.8*
Nuclear Physics	367.0	454.1	454.1	434.1	*422.8*
Basic Energy Sciences	1,134.6	1,421.0	1,421.0	1,445.9	*1,250.3*
Bio. & Env. R&D	579.8	510.3	540.3	560.0	*483.5*
Fusion	287.6	319.0	319.0	307.0	*319.0*
Advanced Scientific Computing	234.7	319.0	319.0	318.7	*283.4*
High Energy Density Physics	—	—	—	79.9	—

Program	FY2006	FY2007 Request	House	Senate	P.L. 110-52
Other	281.6	309.3	309.3	334.3	*292.2*
Adjustments	(5.6)	(5.6)	(5.6)	(5.6)	*(5.7)*
Total, Science	3,596.4	4,102.1	4,131.7	4,241.0	3,797.3
Nuclear Waste Disposal	148.5	156.4	186.4	136.4	99.2
Departmental Admin. (net)	128.5	155.4	102.6	158.4	153.8
Office of Inspector General	41.6	45.5	45.5	45.5	41.8
National Nuclear Security Administration (NNSA)					
Weapons	6,369.6	6,407.9	6,412.0	6,503.1	6,275.6
Nuclear Nonproliferation	1,614.8	1,726.2	1,620.9	1,572.7	1,683.3
Naval Reactors	781.6	795.1	795.1	795.1	*781.8*
Office of Administrator	338.5	386.6	399.6	386.6	*340.3*
Total, NNSA	9,104.5	9,315.8	9,227.6	9,257.4	*9,081.0*
Defense Environmental Cleanup	6,130.4	5,390.3	5,551.8	5,479.1	5,731.8
Other Defense Activities	635.6	717.8	720.8	731.8	*636.3*
Defense Nuclear Waste Disposal	346.5	388.1	388.1	358.1	*346.5*
Total, Defense Activities	16,217.0	15,812.0	15,888.3	15,826.4	*15,795.6*
Power Marketing Administrations (PMA)					
Southeastern	5.5	5.7	5.7	5.7	*5.6*
Southwestern	29.9	31.5	31.5	31.5	*30.0*
Western	231.7	212.2	212.2	212.2	*232.3*
Falcon & Armistad O&M	2.7	2.5	2.5	2.5	*2.7*
Total, PMAs	269.7	252.0	252.0	252.0	*270.6*
FERC	218.2	230.8	230.8	230.8	*255.4*
(revenues)	(218.2)	(230.8)	(230.8)	(230.8)	*(255.4)*
Total, Title III	**24,046.8**	**24,074.8**	**24.375.5**	**24,725.1**	**24,093.2**

Source: DOE FY2007 Congressional Budget Request, February 2006; H.Rept. 109-474; S.Rept. 109-274; P.L. 110-5; DOE FY2007 Operating Plan, March 16, 2007.

Key Policy Issues—Department of Energy

DOE administers a wide variety of programs with different functions and missions. In the following pages, the programs are described, and major issues identified, in approximately the order in which they appear in the budget tables in **Table 7**.

Energy Efficiency and Renewable Energy

A key component of the Administration's American Competitiveness Initiative is the Advanced Energy Initiative (AEI). DOE said AEI "aims to reduce America's dependence on imported

energy sources." Under AEI, initiatives for hydrogen, biofuels, and solar energy would be supported by DOE's Office of Energy Efficiency and Renewable Energy (EERE). To support AEI, the DOE FY2007 request for EERE programs proposed major funding increases under Hydrogen and Fuel Cell programs. The request also sought large increases under the Biomass and Solar Energy programs. Overall, the FY2007 DOE request sought $484.7 million for energy efficiency R&D, which was $32.6 million, or 7.2%, more than the FY2006 appropriation. Also, the request sought $359.2 million for renewable energy R&D, which was $126.0 million, or 54%, more than the FY2006 appropriation.

P.L. 110-5 (H.J.Res. 20) set EERE funding at $1.47 billion, which is $311.6 million more than the FY2006 appropriation. **Table 8** shows how the DOE FY2007 Operating Plan would distribute the $311.6 million across major EERE programs. The $107.0 million for Facilities contains an $80.9 million increase. It includes $63 million to build a new facility at the National Renewable Energy Laboratory (NREL), $20 million for NREL's ethanol research biorefinery, and $16 million for advanced photovoltaic manufacturing equipment. Other key increases include Biomass ($109.9 million), Solar Energy ($77.6 million), Hydrogen ($40.1 million), and Building Technologies ($36.1 million). The main cuts are for Weatherization grants (-$38.0 million), Geothermal (-$17.8 million), and Small Hydro termination (-$0.5 million).

The House Committee report includes several policy directives to EERE. First, it says (pp. 72-73) that EERE could have avoided employee layoffs at the National Renewable Energy Laboratory (NREL) through better management of uncosted balances, and it directs EERE to report by January 31, 2007, on steps taken to identify prior year balances and account for all out-year commitments. Second, the report directs (p. 73) EERE to report by January 31, 2007, on the progress of implementing the Inspector General's recommendations to improve the management of cooperative agreements (IG audit report DOE/IG-0689). Further, the report directs (pp. 74-75) EERE to fully fund a biomass R&D grant to Natureworks LLC, strengthen recruiting from Historically Black Colleges and Universities, and prepare a report on solar water heaters by January 31, 2007, that covers potential energy savings, market impediments, and deployment strategy. Also, one DOE-wide directive that would clearly affect EERE involves funding for the Asia Pacific Partnership (APP), which would support clean, energy-efficient technologies. The report directs (pp. 67-68) DOE to submit a reprogramming request if it intends to support APP with FY2006 funds and to submit a detailed budget justification (which would be considered by the conference committee) if it proposes to use FY2007 funds. Other DOE-wide directives (pp. 68-70) that could affect EERE involve refocusing of Laboratory Directed Research and Development (LDRD) funds to high-priority research, elimination of "excess facilities," updates of five-year plans, and controls over the use of budget reprogrammings.

The Senate Committee report also includes several policy directives to EERE. First, it recommends (p. 116) that DOE complete unfinished awards for biorefineries before funding new ones. It urges that DOE focus on cellulosic ethanol to reduce oil imports, and directs DOE to recommend ways to implement the cellulosic biomass production incentive in EPACT (P.L. 109-58, §942). Second, the Committee joins with the House in requiring (p. 117) a report on solar water heaters. Third, it urges (p. 117) DOE to focus on non-silicon materials and directs DOE to prepare a report by March 31, 2007, on short- and long-term silicon market conditions and the potential impact on the photovoltaic market. Fourth, it recommends (p. 117) a $9 million increase to support deployment of a solar-hydrogen pilot plant that would fulfill certain sections of EPACT. Fifth, the Committee directs (p. 117) that funding for a 1 MW solar thermal facility can only be used for deployment in New Mexico. Sixth, it requests (pp. 117-118) that EERE and OE provide a report by March 2007 that identifies the most promising locations for wind resources and the best opportunities for integrating the potential power generation facilities into the electric grid. Seventh, it encourages (p. 118) DOE to form an interagency group to promote renewable

energy use in all aspects of federal agency operations, especially those on federal lands. In particular, this group should address the issue of wind energy project delays due to Department of Defense concerns about radar interference. Eighth, it recommends (p. 118) that $2.4 million be provided as a competitive award for development of a 2 MW permanent magnet motor wind turbine, which has the potential to eliminate the need for gearboxes. Ninth, it directs (p. 118) that funding for Hydropower include a study of advanced techniques for ocean energy, including an assessment of locations for demonstration plants, with a report by May 1, 2007. Tenth, it directs (pp. 118-119) DOE to study possible impacts of plug-in hybrids on electricity supply and distribution networks, including urban areas, and to study environmental aspects of fuel-switching. Eleventh, it directs (p. 119) DOE to provide a strategy to accelerate the development of zero energy buildings by five to seven years.

Electricity Delivery and Energy Reliability (OE)

The FY2007 request included $124.9 million for the Office of Electricity Delivery and Energy Reliability (OE). The House approved $144.0 million, and the Senate Appropriations Committee approved $135.0 million. P.L. 110-5 includes $137.0 million, which is $21.2 million less than the FY2006 appropriation.

Table 8. Energy Efficiency and Renewable Energy Programs

($ millions)

Program	FY2006	FY2007 Request	FY2007 House	FY2007 Senate	FY2007 P.L. 110-5
Hydrogen Technologies	$153.5	$195.8	$195.8	189.9	193.6
—Fuel Cell Technologies	66.6	96.6	96.6	85.4	—
Biomass & Biorefinery Systems	89.8	149.7	149.7	213.0	199.7
—Biochemical Platform (Cellulose)	10.4	32.8	32.8	—	—
Solar Energy	81.8	148.4	148.4	148.4	159.4
—Photovoltaics	58.8	139.5	134.5	125.5	—
Wind Energy	38.3	43.8	43.8	39.4	49.3
Geothermal Technology	22.8	0.0	5.0	22.5	5.0
Small Hydropower	0.5	0.0	0.0	4.0	0.0
Vehicle Technologies	178.4	166.0	172.5	180.0	188.0
Building Technologies	68.2	77.3	80.0	95.3	104.3
Industrial Technologies	52.1	45.6	51.6	47.6	56.6
Federal Energy Management	19.0	16.9	18.9	16.9	19.5
Facilities & Infrastructure	26.1	5.9	15.9	5.9	107.0
Weatherization Grants	242.6	164.2	268.0	200.0	204.6
State Energy Grants	35.6	49.5	49.5	49.5	49.5
Program Management	115.2	102.0	102.0	101.9	110.2
R&D Subtotal	884.6	962.8	1,001.4	1,136.0	1,220.3
Grants Subtotal	278.2	213.7	317.5	249.5	254.0
Use of Prior Year Balances	—	—	—	—	—

Program	FY2006	FY2007 Request	FY2007 House	FY2007 Senate	FY2007 P.L. 110-5
Total Appropriation, EE &RE	1,162.7	1,176.4	1,319.4	1,385.5	1,474.3
Office of Electricity Delivery & Energy Reliability (OE)[a]	158.2	124.9	144.0	135.0	137.0

Source: DOE FY2007 Operating Plan; S.Rept. 109-274; H.Rept. 109-474; DOE FY2007 Congressional Budget Request, v. 3, Feb. 2006.

a. The Distributed Energy Program was moved from EERE to OE in FY2006.

Nuclear Energy

For nuclear energy research and development—including advanced reactors, fuel cycle technology, nuclear hydrogen production, and infrastructure support—DOE requested $632.7 million for FY2007, an 18.1% increase from the FY2006 appropriation. The request would have boosted funding for the Advanced Fuel Cycle Initiative (AFCI) from $79.2 million in FY2006 to $243.0 million in FY2007. The higher AFCI funding was intended to allow DOE to begin developing an engineering-scale facility to demonstrate new technology for separating plutonium and uranium in spent nuclear fuel, as part of the Administration's Global Nuclear Energy Partnership (GNEP). The nuclear energy program is run by DOE's Office of Nuclear Energy, Science, and Technology.

The House on May 24, 2006, passed its version of the FY2007 Energy and Water Development Appropriations Bill (H.R. 5427, H.Rept. 109-474) with $572.8 million for nuclear energy research and development—$59.9 million below the Bush Administration's request but $20.8 million above the FY2006 funding level. The House-passed funding bill would have cut the AFCI funding request to $120 million, which would still have been 50% above the FY2006 level. In contrast, the Senate Appropriations Committee voted June 29 to increase nuclear energy funding by $151.5 million over the request, to $784.2 million, including $279.0 million for AFCI (S.Rept. 109-274).

The DOE FY2007 operating plan provides $618.2 million for nuclear energy, about 10% above the FY2006 level. AFCI funding more than doubles to $167.5 million.

According to DOE's FY2007 budget justification, the nuclear energy R&D program is intended "to enable nuclear energy to fulfill its promise as a safe, advanced, inexpensive and environmentally benign approach to providing reliable energy to all of the world's people." However, opponents have criticized DOE's nuclear research program as providing wasteful subsidies to an industry that they believe should be phased out as unacceptably hazardous and economically uncompetitive.

Under the Administration's GNEP initiative, plutonium partially separated from the highly radioactive spent fuel from nuclear reactors would be recycled into new fuel to expand the future supply of nuclear fuel and potentially reduce the amount of radioactive waste to be disposed of in a permanent repository. The United States and other advanced nuclear nations would lease new fuel to other nations that agreed to forgo uranium enrichment, spent fuel recycling (also called reprocessing), and other fuel cycle facilities that could be used to produce nuclear weapons materials. The leased fuel would then be returned to supplier nations for reprocessing. Solidified high-level reprocessing waste would be sent back to the nation that had used the leased fuel, along with supplies of fresh nuclear fuel, according to the GNEP concept; see http://www.gnep.energy.gov.

Although GNEP is largely conceptual at this point, DOE issued a Spent Nuclear Fuel Recycling Program Plan in May 2006 that provides a general schedule for a GNEP Technology Demonstration Program (TDP),[2] which would develop the necessary technologies to achieve GNEP's goals. According to the Program Plan, the first phase of the TDP, running through FY2006, consisted of "program definition and development" and acceleration of AFCI. Phase 2, running through FY2008, is to focus on the design of technology demonstration facilities, which then are to begin operating during Phase 3, from FY2008 to FY2020.

Nuclear critics oppose GNEP's emphasis on spent fuel reprocessing, which they see as a weapons proliferation risk, even if weapons-useable plutonium is not completely separated from other spent fuel elements, as envisioned by the Administration. "As the research of DOE scientists makes clear, the reprocessing technologies under consideration would still produce a material that is not radioactive enough to deter theft, and that could be used to make nuclear weapons," according to the Union of Concerned Scientists.[3]

Nuclear Power 2010

President Bush's specific mention of "clean, safe nuclear energy" in his 2006 State of the Union address reiterated the Administration's interest in encouraging construction of new commercial reactors—for which there have been no U.S. orders since 1978. DOE's efforts to restart the nuclear construction pipeline have been focused on the Nuclear Power 2010 Program, which will pay up to half of the nuclear industry's costs of seeking regulatory approval for new reactor sites, applying for new reactor licenses, and preparing detailed plant designs. The program is intended to provide assistance for advanced versions of existing commercial nuclear plants that could be ordered within the next few years.

The Nuclear Power 2010 Program is helping three utilities seek NRC approval for potential nuclear reactor sites in Illinois, Mississippi, and Virginia. The first of those, for the Illinois site, was issued March 15, 2007, and the second, for the Mississippi site, on March 27, 2007. In addition, two industry consortia are receiving DOE assistance over the next several years to design and license new nuclear power plants. DOE awarded the first funding to the consortia in 2004. DOE's FY2007 budget request included $54.0 million for Nuclear Power 2010; the House-passed funding bill would have provided the full request, and the Senate Appropriations Committee voted to increase the program's funding to $88.0 million. DOE's operating plan provides $80.3 million. DOE assistance under the program, including the early site permits, is planned to reach a multiyear total of about $550 million.

Generation IV

Advanced commercial reactor technologies that are not yet close to deployment are the focus of DOE's Generation IV Nuclear Energy Systems Initiative, for which $31.4 million was requested for FY2007—30% less than the FY2006 request and more than 40% below the final appropriation of $53.3 million. The House-passed funding bill would have provided the requested amount; most of the proposed reduction would have come from the Next Generation Nuclear Plant (NGNP), which would have dropped from $40 million to $23.4 million. The Senate Appropriations Committee voted to provide $48.0 million for the program and continue level

[2] DOE, *Spent Nuclear Fuel Recycling Plan*, Report to Congress, May 2006.

[3] Union of Concerned Scientists, *U.S. Nuclear Fuel Reprocessing Initiative*, http://www.ucsusa.org/global_security/nuclear_terrorism/doe_proliferation_resistance.html

funding of $40.0 million for NGNP. The DOE operating plan provides $35.6 million for Generation IV.

The Energy Policy Act of 2005 authorizes $1.25 billion through FY2015 for NGNP development and construction (Title VI, Subtitle C). The authorization requires that NGNP be based on research conducted by the Generation IV program and be capable of producing electricity, hydrogen, or both. The Generation IV program is focusing on advanced designs that could be commercially available around 2020-2030.

Advanced Fuel Cycle Initiative

The nuclear energy program's Advanced Fuel Cycle Initiative (AFCI) was the primary component of GNEP in the FY2007 budget request. The $243 million budget request for AFCI constituted nearly all of the $250 million GNEP program (with the remaining $7 million requested for program direction).

According to the budget justification, AFCI will develop and demonstrate nuclear fuel cycles that could reduce the long-term hazard of spent nuclear fuel and recover additional energy. Such technologies would involve separation of plutonium, uranium, and other long-lived radioactive materials from spent fuel for re-use in a nuclear reactor or for transmutation in a particle accelerator. Most of the proposed AFCI funding would be for an engineering-scale demonstration of a separations technology called UREX+ ($155 million), in which uranium and other elements are chemically removed from dissolved spent fuel, leaving a mixture of plutonium and other highly radioactive elements. Proponents believe the process is proliferation-resistant, because further purification would be required to make the plutonium useable for weapons and because its high radioactivity would make it difficult to divert or work with.

However, the House Appropriations Committee expressed concern that more fundamental research on the UREX+ process was needed, particularly on waste byproducts, before moving ahead to the demonstration phase. As a result, the House-passed energy and water funding bill would have held the program's spending to $120 million. But the Senate Appropriations Committee, calling GNEP "imperative" for reducing nuclear waste and increasing energy supplies, boosted AFCI funding by $36 million over the request. As noted above, the spending plan provides $167.5 million for the program.

Removing uranium from spent fuel would eliminate most of the volume of spent nuclear fuel that would otherwise require disposal in a deep geologic repository, which DOE is developing at Yucca Mountain, Nevada. The UREX+ process also would reduce the heat generated by nuclear waste—the major limit on the repository's capacity—by removing cesium and strontium for separate storage and decay over several hundred years. Plutonium and other long-lived elements would be fissioned in accelerators or fast reactors (such as the type under development by the Generation IV program) to reduce the long-term hazard of nuclear waste. Even if technically feasible, however, the economic viability of such waste processing has yet to be determined, and it still faces significant opposition on nuclear nonproliferation grounds.

Nuclear Hydrogen Initiative

In support of President Bush's program to develop hydrogen-fueled vehicles, DOE requested $18.7 million in FY2007 for the Nuclear Hydrogen Initiative, a 25% reduction from the FY2006 level. The House-passed funding bill would have provided the same amount, but the Senate Appropriations Committee voted to boost the program to $31.7 million. The DOE operating plan provides $19.3 million. According to DOE's FY2005 budget justification, "preliminary estimates ... indicate that hydrogen produced using nuclear-driven thermochemical or high-temperature

electrolysis processes would be only slightly more expensive than gasoline" and result in far less air pollution.

Fossil Energy Research, Development, and Demonstration

The Bush Administration's FY2007 budget request of $469.7 million for fossil energy research and development was about 21% less than the amount enacted for FY2006 ($592.0 million). Major funding categories and amounts included Coal (President's Coal Research Initiative, $280.7 million, and Other Coal Related Activities, $63.9 million), Program Direction ($129 million), and Fossil Energy Environmental Restoration ($9.7 million). Coal and coal-related activities accounted for more than 70% of the FY2007 Fossil Energy R&D budget request. The House bill would have funded Fossil Energy programs at $558.2 million, including increasing the Clean Coal Power Initiative from $5 million to $36.4 million, and other increases in the Fuels and Power Systems category. The Senate Appropriations Committee approved $644.3 million for Fossil Energy programs, 37% more than the Administration's request. It would have provided $70 million for the Clean Coal Power Initiative and substantial increases for the Fuels and Power Systems programs. P.L. 110-5 funded the programs at the FY2006 level, $592 million.

DOE again proposed for FY2007 to terminate both the Natural Gas and Oil Technology programs, based on a Program Assessment Rating Tool review that rated both programs ineffective. Congressional support of Natural Gas and Oil Technology programs has been significantly higher than the Bush Administration's request in previous years. Congress funded both programs in FY2006. The House Committee agreed not to fund Natural Gas Technologies and scaled back funding for Petroleum Technologies to $2.7 million because, according to the Committee, the Energy Policy Act of 2005 authorizes $50 million of "mandatory receipts" for oil and gas technologies R&D. The Senate Appropriations Committee recommended $17 million for the development of natural gas from methane hydrates and $10 million for R&D efforts in oil shale and tar sands technology.

The Administration's $5 million request for its Clean Coal Power Initiative (CCPI) would have been directed toward the next CCPI solicitation, but no new money would have been requested for CCPI projects directly. The Administration said it would rather improve the use of current CCPI funds. The Senate Appropriations Committee believed that the small request for CCPI was inconsistent with the Administration's goal of long-term domestic energy development. According to DOE's budget justification, CCPI is a "cost-shared program between the government and industry to rapidly demonstrate emerging technologies in coal-based power generation and to accelerate their commercialization." About $500 million has been appropriated since FY2002. The Administration previously announced its commitment to spend $2 billion over 10 years for clean coal research. CCPI is similar to the Clean Coal Technology Program (CCTP), which began in the late 1980s. CCTP has completed most of its projects and has been subject to rescissions and deferrals since the mid-1990s. It eventually is to be phased out.

However, while Congress and the Administration agreed that there is an unused, previously appropriated balance of $257 million from the Clean Coal Technology Program, the Administration requested again in FY2007 to rescind the money and incorporate the funds into the fossil fuel account for FutureGen activities as an advanced appropriation to be used beginning in FY2007 ($54 million) and beyond. In FY2006, Congress deferred the $257 million but acknowledged that the funds would be used for the FutureGen program in fiscal years 2007 and beyond (see FutureGen funding schedule in **Table 9**, below). FutureGen is a project to demonstrate co-production of electricity and hydrogen from coal without emissions. For FY2007, the House Appropriations Committee recommended rescinding $257 million of clean coal funding because it is "no longer needed to complete active projects in the program." The Senate

Appropriations Committee would instead have deferred $203 million and rescinded $50 million from the CCTP. None of these proposals was included in P.L. 110-5.

Within the Coal R&D program, the Administration requested $54 million for gasification research in FY2007, about $2 million less than what was enacted for FY2006. This level of funding request indicated a sustained commitment by the Administration and Congress to the integrated gasification combined cycle (IGCC) technology aimed at commercialization. There is ongoing investment in IGCC because of its potential benefits from reduced NOx, SOx, mercury, and fine particulate matter emissions. Moreover, lower CO2 emissions through greater plant efficiencies and/or potential sequestration could be substantial. Under the Administration's request, funding for DOE's Carbon Sequestration program would have increased from $66.3 million in FY2006 to $73.9 million in FY2007. The House Appropriations Committee supported FutureGen and Carbon Sequestration programs at the same levels of funding as the Administration's request. The Senate Appropriations Committee voted to provide $90 million for Carbon Sequestration, $16 million more than the Administration's request and the House allowance and the same level of funding for FutureGen as the Administration's request. But the Senate Committee expressed its concern over the need for the Administration to maintain an adequate level of funding for core fossil energy R&D programs.

Table 9. FutureGen Funding Profile

($ millions)

FY	DOE direct	Other cash flows	Total
2004-2005	27	2	11
2006	18	7	25
2007	50	25	75
2008	100	44	144
2009	89	75	164
2010	57	66	123
2011-2018	159	224	383
Total	500	450	950

Source: U.S. Department of Energy, Office of Fossil Energy, FutureGen, Integrated Hydrogen, Electric Power Production and Carbon Sequestration Research Initiative, March 2004.

Strategic Petroleum Reserve

The Strategic Petroleum Reserve (SPR), authorized by the Energy Policy and Conservation Act (P.L. 94-163) in late 1975, consists of caverns formed out of naturally occurring salt domes in Louisiana and Texas in which roughly 685 million barrels of crude oil are stored. The purpose of the SPR is to provide an emergency source of crude oil that may be tapped in the event of a presidential finding that an interruption in oil supply, or an interruption threatening adverse economic effects, warrants a drawdown from the reserve. A Northeast Heating Oil Reserve (NHOR) was established during the Clinton Administration. NHOR houses 2 million barrels of home heating oil in above-ground facilities in Connecticut, New Jersey, and Rhode Island.

Recent program costs for the SPR have been almost exclusively dedicated to maintaining SPR facilities and keeping the SPR in readiness should it be needed. Congress agreed to a funding level of $207.3 million for the program in FY2006. The Administration request for FY2007 for the SPR was $155.4 million, and the House and Senate bills included the same amount. P.L. 110-

5 did not specifically change SPR's FY2007 funding from the FY2006 level of $164.4 million, and DOE's FY2007 operating plan projects that amount of spending.

Science

The DOE Office of Science conducts basic research in six program areas: basic energy sciences, high-energy physics, biological and environmental research, nuclear physics, fusion energy sciences, and advanced scientific computing research. Through these programs, DOE is the third-largest federal funder of basic research and the largest federal funder of research in the physical sciences.[4] For FY2007, DOE requested $4.102 billion for Science, an increase of 14% from the FY2006 appropriation of $3.596 billion. This unusually large increase reflected the American Competitiveness Initiative (ACI), which the President announced in his State of the Union address on January 31, 2006. Over the next 10 years, the ACI would double R&D funding for the DOE Office of Science and two other agencies. The House provided $4.132 billion, or $30 million more than the request. The Senate committee recommended $4.241 billion, or $139 million more than the request. The appropriation specified in the final continuing resolution was $3.796 billion (P.L. 110-5, Sec. 20313).

The requested funding for the largest Office of Science program, basic energy sciences, was $1.421 billion, a 25% increase from the FY2006 level of $1.135 billion. About $200 million of the requested increase would have supported expanded facility operating time. (The House and Senate appropriations reports for FY2006 both called for increased funding for this purpose.) The House provided the requested amount. The Senate committee recommended an additional $25 million for water-related research. Under the March 2007 operating plan, basic energy sciences received $1.250 billion.

The request for fusion energy sciences was $319 million, an 11% increase. Included was $60 million for U.S. participation in the International Thermonuclear Experimental Reactor (ITER), a fusion facility whose other participants include China, the European Union, India, Japan, Russia, and South Korea. The estimated total U.S. share of the cost of ITER is $1.2 billion through FY2014. The House and conference appropriations reports for FY2006 both directed DOE to fund ITER out of additional resources, not through reductions in the domestic fusion program. Although the multiyear increase proposed for Science as part of the American Competitiveness Initiative may take some of the budget pressure off the fusion program, the impact of ITER on the domestic program is likely to remain an issue for future years. The House provided the requested amount, with the House committee report expressing pleasure "that the department finally requested sufficient funding." The Senate committee recommended the requested amount, but proposed moving $12 million of it to a new Science program in high energy-density science. Under the Senate committee recommendations, the new program would also have received $20 million moved from nuclear physics, $8 million moved from high-energy physics, and $39 million moved from the inertial confinement fusion program (in the Weapons Activities account) for a total of $80 million. Under the March 2007 operating plan, fusion energy sciences received the requested amount, $319 million. The operating plan did not include the Senate's proposed new program in high energy-density science.

Biological and environmental research was the only Science program whose request for FY2007 was less than it received in FY2006: $510 million, down 12%. The decrease resulted from the requested termination of 161 congressionally directed projects, with total funding of $130

[4] Based on preliminary FY2005 data from Tables 29 and 22 of National Science Foundation, Division of Science Resources Statistics, *Federal Funds for Research and Development: Fiscal Years 2003, 2004, and 2005*, NSF 06-313 (May 2006).

million, that were specified in the FY2006 appropriations conference report. The House provided the requested funding plus an increase of $30 million to pay for 67 directed projects. The Senate committee recommended the requested funding plus an increase of $50 million to pay for 61 directed projects. As in FY2006, the budget request for biological and environmental research included no funds for nuclear medicine. The Senate bill (Sec. 314) would have directed DOE to support nuclear medicine activities from the Energy Technology Commercialization Fund established by Sec. 1001(e) of the Energy Policy Act of 2005 (P.L. 109-58). The Senate report expressed the committee's expectation that $25 million would be provided in this way. The March 2007 operating plan provided $483 million for biological and environmental research.

The three remaining Office of Science research programs would all have received increases under the FY2007 request: $775 million for high-energy physics, up 8% from FY2006; $454 million for nuclear physics, up 24%; and $319 million for advanced scientific computing research, up 36%. The request for nuclear physics included no funds for construction of the Relativistic Ion Accelerator, despite direction in Sec. 981 of P.L. 109-58 that construction of this project must begin no later than the end of FY2008. The House provided the requested amount for all three programs, and the House committee report directed DOE to submit a report on its plans to comply with or seek relief from the Relativistic Ion Accelerator requirements of P.L. 109-58. The Senate committee recommended the requested amount for all three programs but moved some of the recommended funds to a new program in high energy-density science as noted above. The Senate committee report also expressed concern about the long-term effects that funding for the planned International Linear Collider project may have on other activities supported by the high-energy physics program. (In this discussion, the Senate report made analogies with both ITER and the Relativistic Ion Accelerator.) For all three programs, the March 2007 operating plan provided more than the FY2006 appropriation but less than the request: $752 million for high-energy physics, $423 million for nuclear physics, and $283 million for advanced scientific computing research.

The Senate committee recommended an increase of $25 million in non-research funding for science workforce development. The additional funds would have paid for graduate fellowships, summer training for primary and secondary mathematics and science teachers, and the use of national laboratory staff and equipment to support centers of excellence in public secondary schools. These activities were closely related to provisions of the PACE-Energy Act (S. 2197) and PACE-Education Act (S. 2198). The March 2007 operating plan provided $8 million for the workforce development program, a decrease of $3 million from the request.

Nuclear Waste Disposal

DOE's Office of Civilian Radioactive Waste Management (OCRWM) is responsible for developing a nuclear waste repository at Yucca Mountain, Nevada, for disposal of nuclear reactor spent fuel and defense-related high-level radioactive waste. OCRWM's funding comes from two appropriations accounts: the Nuclear Waste Disposal account, for which DOE requested $156.4 million for FY2007, and Defense Nuclear Waste Disposal, with a request of $388.1 million. Appropriations under the Nuclear Waste Disposal account come from the Nuclear Waste Fund, which holds disposal fees paid by nuclear utilities.

The total FY2007 nuclear waste budget request of $544.5 million was $50 million above the FY2006 appropriation. The House approved the full request, plus $30 million, not from the Nuclear Waste Fund, "to initiate the process for selecting and licensing one or more interim storage sites." The House Appropriations Committee further stated:

> If the Congress has not provided the Department with clear statutory authority for interim storage by the end of FY2007, the remaining funds shall be re-directed to non-site-specific

> activities to select a second repository for nuclear waste disposal, consistent with Section 161 of the Nuclear Waste Policy Act [which prohibits site-specific activities on a second repository].

The Senate Appropriations Committee voted to cut the request to $494.5 million, about the same as the FY2006 funding level. Delays in the Yucca Mountain program "have forced the Committee to reconsider the project's budget needs," according to the panel's report. The Committee directed DOE to reduce funding for transportation activities related to future waste disposal at Yucca Mountain and to not proceed with any procurement or construction activities at a planned waste canister handling facility. The DOE FY2007 operating plan provides $445.7 million for the nuclear waste program—$99.2 million from the Nuclear Waste Fund and $346.5 million in the defense nuclear waste disposal account.

DOE announced on October 25, 2005, that it would require most spent fuel to be sealed in standardized canisters before shipment to Yucca Mountain, a change that would largely eliminate the handling of individual fuel assemblies at the site. DOE subsequently informed the Nuclear Regulatory Commission that making those changes to the repository's operational plans would further delay submission of a Yucca Mountain license application to NRC. DOE announced on July 19, 2006, that an application would be submitted by June 30, 2008, with a goal of opening the repository in 2017.

Because of the continued delays, the Senate panel added an extensive provision to the Energy and Water bill (section 313), which ultimately was not enacted, to authorize the Secretary of Energy to designate interim storage sites for spent nuclear fuel. The Secretary would have been required, after consultation with the governor, to designate a storage site in each state with a nuclear power plant, if feasible, or to designate regional storage facilities. Such sites would have been required to be federally owned or able to be purchased by the federal government from a willing seller and could not be located in Nevada or Utah (which has a licensed but undeveloped private storage site). DOE would have been required to take over all responsibility for spent fuel stored at shutdown reactors, upon the reactor owners' request. The storage provisions in this section would have been deemed sufficient to satisfy NRC requirements that new nuclear power plants demonstrate the ability to safely dispose of nuclear waste before being licensed to operate.

The Nuclear Waste Policy Act of 1982 (NWPA, P.L. 97-425), as amended, names Yucca Mountain as the sole candidate site for a national geologic repository. Congress passed an approval resolution in July 2002 (H.J.Res. 87, P.L. 107-200) that authorized the Yucca Mountain project to proceed to the licensing phase.

NWPA required DOE to begin taking waste from nuclear plant sites by January 31, 1998. Nuclear utilities, upset over DOE's failure to meet that deadline, have won two federal court decisions upholding the department's obligation to meet the deadline and to compensate utilities for any resulting damages. Utilities have also won several cases in the U.S. Court of Federal Claims. The nation's largest nuclear utility, Exelon Corporation, reached a breach-of-contract settlement with the federal government in August 2004 that may total $600 million if DOE does not begin taking spent fuel before its current goal of 2017.

Further delays in the Yucca Mountain program could result from a July 2004 court decision that overturned a key aspect of the Environmental Protection Agency's (EPA's) regulations for the repository. A three-judge panel of the U.S. Court of Appeals for the District of Columbia Circuit ruled that EPA's 10,000-year compliance period was too short, but it rejected several other challenges to the standards. EPA proposed revised Yucca Mountain standards on August 9, 2005.

More controversy erupted in March 2005 with the release of e-mail messages from Yucca Mountain scientists that indicated that some of their data and documentation may have been

fabricated. The House Appropriations Committee report cited all those problems as reasons for establishing a DOE interim storage program. (For more information, see CRS Report RL33461, *Civilian Nuclear Waste Disposal*, by Mark Holt.)

Nuclear Weapons Stockpile Stewardship

Congress established the Stockpile Stewardship Program in the FY1994 National Defense Authorization Act (P.L. 103-160) "to ensure the preservation of the core intellectual and technical competencies of the United States in nuclear weapons." The program is operated by the National Nuclear Security Administration (NNSA), a semiautonomous agency within DOE that Congress established in the FY2000 National Defense Authorization Act (P.L. 106-65, Title XXXII). It seeks to maintain the safety and reliability of the U.S. nuclear stockpile.

Stockpile stewardship consists of all activities in NNSA's Weapons Activities account. The three main elements of stockpile stewardship, described below, are Directed Stockpile Work (DSW), Campaigns, and Readiness in Technical Base and Facilities (RTBF). **Table 10** presents funding for these elements. NNSA manages two programs outside of Weapons Activities: Defense Nuclear Nonproliferation, discussed later in this report, and Naval Reactors.

Most stewardship activities take place at the nuclear weapons complex, which consists of three laboratories (Los Alamos National Laboratory, NM; Lawrence Livermore National Laboratory, CA; and Sandia National Laboratories, NM and CA); four production sites (Kansas City Plant, MO; Pantex Plant, TX; Savannah River Site, SC; and Y-12 Plant, TN); and the Nevada Test Site. NNSA manages and sets policy for the complex; contractors to NNSA operate the eight sites.

Table 10. Funding for Weapons Activities

($ millions)

Program	FY2006	FY2007 Request	House	Senate Approp. Comm.	Operating Plan
DSW	$1,372.3	$1,410.3	$1,312.2	$1,323.2	$1,425.7
Campaigns	2,123.2	1,937.4	2,033.6	2,027.6	1,979.0
CNPC	—	—	100.0	—	—
RTBF	1,644.8	1,685.8	1,658.8	1,780.8	1,613.2
Other[a]	1,229.4	1,374.5	1,307.4	1,371.5	1,257.7
Total	**6,369.6**	**6,407.9**	**6,412.0**	**6,503.1**	**6,275.6**

Sources: DOE FY2007 Congressional Budget Request, vol. 1 (NNSA), p. 55; H.Rept. 109-474, pp. 138-142; and U.S. Department of Energy, *FY 2007 Operating Plan by Appropriation,* March 16, 2007, pp. 15-21.

Notes: Details may not add to totals due to rounding. DSW, Directed Stockpile Work; RTBF, Readiness in Technical Base and Facilities; CNPC, Consolidated Nuclear Production Center.

a. Includes Secure Transportation Asset, Nuclear Weapons Incident Response, Facilities and Infrastructure Recapitalization Program, Environmental Projects and Operations, Safeguards and Security, and several adjustments.

The FY2007 request document includes data from NNSA's Future Years Nuclear Security Program (FYNSP), which projects the budget and components through FY2011 (see **Table 11**).

Table 11. NNSA Future Years Nuclear Security Program

($ millions)

	FY2007	FY2008	FY2009	FY2010	FY2011
DSW	$1,410.3	$1,381.9	$1,431.4	$1,462.3	$1,495.0
Campaigns	1,937.4	1,961.6	1,920.9	1,899.0	1,853.3
RTBF	1,685.8	1,767.6	1,833.8	1,907.5	2,008.9
Other[a]	1,374.5	1,425.0	1,480.7	1,531.3	1,578.9
Total	6,407.9	6,536.0	6,666.8	6,800.1	6,936.1

Source: DOE FY2007 Congressional Budget Request, vol. 1 (NNSA), pp. 55, 56.

Note: Details may not add to totals because of rounding.

a. Includes Secure Transportation Asset, Nuclear Weapons Incident Response, Facilities and Infrastructure Recapitalization Program, Environmental Projects and Operations, Safeguards and Security, and several adjustments.

Nuclear Weapons Complex Reconfiguration

In testimony before the House Appropriations Committee's Energy and Water Subcommittee in March 2004, the Secretary of Energy agreed to conduct a review of reconfiguring the nuclear weapons complex (the "Complex"). The Committee's FY2005 energy and water report contained a requirement for that study. The committee was concerned about high costs, the security of fissile material distributed among many sites, and the size and age of the current Complex. A task force of the Secretary of Energy Advisory Board released its final report in October 2005. It recommended, among other things, having a Consolidated Nuclear Production Center that would make nuclear components (such as those of uranium or plutonium) for nuclear weapons and would assemble and dismantle nuclear weapons. The task force also recommended consolidating large quantities of uranium and plutonium at few sites, and probably closing several current Complex sites. The House Appropriations Committee, in its FY2007 report, supported the task force's recommendations and rejected NNSA's plan to modernize the current Complex in place. The Committee recommended $100.0 million "for transition planning, site selection, and preliminary design and development for a consolidated nuclear production site for reliable replacement warheads and stockpile support." The bill as passed by the House provided this sum. NNSA had not requested funds for this purpose. The Senate Appropriations Committee did not recommend funds for this purpose, and the DOE Operating Plan did not include such funds.

Directed Stockpile Work (DSW)

This program involves work directly on nuclear weapons in the stockpile, such as monitoring their condition; maintaining them through repairs, refurbishment, life extension, and modifications; R&D in support of specific warheads; and dismantlement. The FY2007 DSW request would support life extension programs for three nuclear warheads: B61 (gravity bomb), W76 (for Trident II submarine-launched ballistic missiles), and W80 (for cruise missiles). It would fund surveillance and maintenance for nine warhead types, dismantlement and disposition of retired warheads and components, and management and technology work linked to multiple warhead types or to no specific warhead type. It also included funds for the Reliable Replacement Warhead (RRW) program.

RRW originated as a funded program in the FY2005 Consolidated Appropriations Act, P.L. 108-447, where it was described as a "program to improve the reliability, longevity, and certifiability

of existing weapons and their components." NNSA had not requested funds for it, and committee reports had not mentioned it. Instead, the legislation transferred $9.0 million to RRW from the Advanced Concepts Initiative, a weapons-related research program. NNSA requested $9.4 million for RRW for FY2006. It stated that the program "is to demonstrate the feasibility of developing reliable replacement components that are producible and certifiable for the existing stockpile" and to initially provide replacement pits (first-stage cores) "that can be certified without Underground Tests." For FY2006, Congress appropriated $25.0 million (subsequently reduced to $24.75 million by a 1% across-the-board rescission). The FY2007 request was $27.7 million, and outyear projections were FY2008, $14.6 million; FY2009, $29.7 million; FY2010, $29.6 million; and FY2011, $28.7 million. (See CRS Report RL32929, *The Reliable Replacement Warhead Program: Background and Current Developments*, by Jonathan Medalia.)

Although RRW is a small program in relation to the total NNSA budget, the House Appropriations Committee, in its FY2006 report on the energy and water bill, viewed RRW as enabling large changes: transitioning the nuclear weapons complex "from a large, expensive Cold War relic into a smaller, more efficient modern complex"; allowing "long-term savings by phasing out the multiple redundant Cold War warhead designs that require maintaining multiple obsolete production technologies"; "obviat[ing] any reason to move to a provocative 18-month test readiness posture" by increasing warhead reliability and reducing the need to test; permitting a reduction in Advanced Simulation and Computing funds by redirecting them to current warhead maintenance programs pending initiation of RRW; and supporting other changes and budget decisions. The Senate Appropriations Committee's report stated that the recommended funding increase for RRW is "to accelerate the planning, development and design for a comprehensive RRW strategy that improves the reliability, longevity and certifiability of existing weapons and their components." The conference report emphasized that RRW design work "must stay within the military requirements of the existing deployed stockpile" and that any design "must stay within the design parameters validated by past nuclear tests." Other goals that the conference report set for RRW were improving manufacturing practices, reducing cost, and increasing performance margins to support a reduction in stockpile size. Further, P.L. 109-163, the FY2006 National Defense Authorization Act, section 3111, set seven objectives for the RRW program, including "[t]o increase the reliability, safety, and security of the United States nuclear weapons stockpile" and "[t]o further reduce the likelihood of the resumption of underground nuclear weapons testing."

For FY2007, the Administration requested $27.7 million for RRW. In its FY2007 report, the House Appropriations Committee linked RRW with a restructured, smaller, and consolidated nuclear weapons complex. "The Committee supports the RRW, but only if it is part of a larger package of more comprehensive weapons complex reforms." It recommended $52.7 million for RRW but restricted use of the additional $25.0 million until NNSA delivered an infrastructure plan to Congress. The committee also directed NNSA to have the JASON Defense Advisory Group conduct a peer review of competing candidate RRW designs and to analyze the premise of RRW—that a new warhead can be designed and deployed without nuclear testing. The committee called for the report to be submitted to Congress. The bill as passed by the House left these provisions unchanged.

Also under DSW, the committee (1) reduced the $232.7 million request for warhead life extension programs by $80.0 million, directed NNSA to terminate the life extension program for the W80 warhead for cruise missiles, and used the funds to support weapons complex transformation; and (2) increased funding for warhead dismantlement from $75.0 million to $105.0 million to accelerate that activity. The bill as passed by the House left these provisions unchanged.

The Senate Appropriations Committee strongly supported RRW. It found, "The directors of Los Alamos, Sandia and Livermore National Labs and the Commander, U.S. Strategic Command share the belief that maintaining incremental modifications to the existing and highly optimized legacy systems [i.e., life-extension programs (LEPs) of warheads now in the stockpile] is not sustainable." It "urges the NNSA to accelerate the transition to a responsive infrastructure and to proceed expeditiously with the RRW design." It noted that DOD and the Nuclear Weapons Council no longer support the W80 LEP, and provided $10.0 million for a design competition for a second RRW in lieu of W80 LEP activities. It provided $62.7 million for RRW, an increase of $35.0 million from the budget request. It recommended reducing funds for warhead dismantlement to $35.0 million, preferring to ensure that facilities for disassembling pits and for fabricating mixed-oxide fuel will be built before providing full funding.

DOE's FY2007 Operating Plan provided $35.8 million for RRW; $264.4 million for Life Extension Programs, including $12.5 million for the W80 Life Extension Program; and $75.0 million for weapons dismantlement and disposition.

In the FY2004-FY2006 budget cycles, the Robust Nuclear Earth Penetrator (RNEP) was highly controversial. RNEP was to be a study of the cost and feasibility of modifying existing nuclear bombs to enable them to penetrate the ground before detonating, thereby magnifying their effect on a buried target. (See CRS Report RL32130, *Nuclear Weapon Initiatives: Low-Yield R&D, Advanced Concepts, Earth Penetrators, Test Readiness*, by Jonathan Medalia, and CRS Report RL32347, *"Bunker Busters": Robust Nuclear Earth Penetrator Issues, FY2005-FY2007*, by Jonathan Medalia.) The FY2005 and FY2006 Energy and Water Development Appropriations Acts deleted all funds for RNEP. For FY2007, NNSA requested no funds for the program, and the FY2007 Operating Plan provided none.

Campaigns

These are "multi-year, multi-functional efforts" that "provide specialized scientific knowledge and technical support to the directed stockpile work on the nuclear weapons stockpile." The FY2007 request included six Campaigns, each with multiple components: Science, Engineering, Inertial Confinement Fusion and High Yield, Advanced Simulation and Computing, Pit Manufacturing and Certification, and Readiness. Many items within Campaigns have significance for policy decisions. As one example, the Science Campaign's goals include improving the ability to assess warhead performance without nuclear testing, improving readiness to conduct tests should the need arise, and maintaining the scientific infrastructure of the nuclear weapons laboratories.

NNSA's proposal to build a Modern Pit Facility (MPF) had been controversial for a number of years. A pit is the fissile core of a nuclear weapon that is used to trigger a thermonuclear explosion. The United States has been unable to manufacture pits that can be certified for use in the stockpile since 1989. Los Alamos has a small-scale pit manufacturing facility, called TA-55; NNSA's plan is that TA-55 would be able to manufacture 10 pits per year by the end of FY2007 and 30-40 by FY2012, but NNSA saw that capacity as insufficient to maintain the stockpile and has favored building MPF, with a capacity of perhaps 125 pits per year. H.R. 2419, the FY2006 Energy and Water Development Appropriations Bill, as passed by the House, eliminated MPF funds until "capacity requirements tied to the long-term stockpile size are determined" and "until the long-term strategy for the physical infrastructure of the weapons complex has incorporated the Reliable Replacement Warhead strategy." The bill as passed by the Senate provided the amount requested for MPF, $7.7 million. The appropriation bill, as passed, provided no funds for MPF. Conferees on the energy and water bill directed NNSA to focus instead on improving manufacturing capability at TA-55. In response, NNSA requested no funds for MPF for FY2007

and instead plans to increase capacity at TA-55. NNSA requested $237.6 million for the Pit Manufacturing and Certification campaign for FY2007; H.R. 5427 as passed by the House provided that amount, and the Senate Appropriations Committee recommended that amount. The FY2007 Operating Plan included $242.4 million for this activity.

The appropriate test readiness posture—the time between a presidential order to resume testing and the conduct of the test—has been contentious. The posture was set at 24 to 36 months several years ago, with fears that it was in actuality 36 months or more. The Administration and Congress sought to shorten it, but there was a dispute over how much. NNSA and the Armed Services Committees favored an 18-month posture on grounds that it would take that long to prepare a test but that any testing should not be delayed beyond that time. In contrast, the Appropriations Committees favored a 24-month posture on grounds that an 18-month posture would be provocative and significantly more costly. (See CRS Report RL33548, *Comprehensive Nuclear-Test-Ban Treaty: Background and Current Developments*, by Jonathan Medalia.) The FY2006 request was $25.0 million; the appropriation was $19.8 million. In its FY2007 request, NNSA stated that it achieved a 24-month readiness posture in FY2005 and planned to maintain that posture at least through FY2011. It further stated that the posture is 18 months "under current law" but that it "has thus far been limited to 24 months by Congressional funding." The FY2007 test readiness request was $14.8 million; H.R. 5427 as passed by the House provided that amount, the Senate Appropriations Committee recommended that amount; and the FY2007 Operating Plan included $14.6 million.

The Engineering Campaign includes the Enhanced Surveillance Program (ESP), which seeks to develop "predictive capabilities for early identification and assessment of stockpile aging concerns ... to give NNSA a firm basis for determining when systems must be refurbished." Of particular interest to Congress, it is conducting experiments to determine the service life of pits based on plutonium aging characteristics. The result will bear on decisions to build MPF and to pursue RRW. NNSA requested $96.2 million for ESP for FY2006; the appropriation was $99.2 million. The FY2007 request was $86.5 million; H.R. 5427 as passed by the House provided that amount. The Senate Appropriations Committee recommended $103.2 million, with some of the funds "used to accelerate the deployment of advanced micro-engineering devices that can be used to adopt advanced surveillance devices into the RRW design." The FY2007 Operating Plan provided $87.5 million.

According to NNSA, the Inertial Confinement Fusion (ICF) and High Yield Campaign "is to develop laboratory capabilities to create and measure extreme conditions ... approaching those in a nuclear explosion, and conduct weapons-related research in these environments." A key part of this campaign is the National Ignition Facility (NIF), a partly completed facility at Lawrence Livermore National Laboratory that is already the world's most powerful laser. NNSA plans to complete the NIF project by March 30, 2010.

For FY2006, NNSA requested $141.9 million for NIF construction, and H.R. 2419, the Energy and Water Development Appropriations Bill, as passed by the House, contained that sum. The Senate Appropriations Committee noted that the planned five-year budget projection for Weapons Activities in the FY2006 request was reduced by $3.0 billion, compared with the FY2005 request, and directed that no funds be expended on NIF construction "in order to focus on supporting a comprehensive stewardship program." The appropriation was $140.5 million.

For FY2007, NNSA requested $451.2 million for the ICF and High Yield Campaign, of which $111.4 million was for NIF construction. H.R. 5427 as passed by the House provided $528.2 million for this campaign, including the requested amount for NIF construction. The Senate Appropriations Committee was critical of NIF. It called NNSA's "enhanced management" activity for the campaign "a NIF-at-all-costs strategy." It continued, "The NNSA has pursued this

agenda as a means to justify an aggressive spending baseline at the expense of more compelling stewardship responsibilities in the ICF campaign. The NNSA has proven unable to maintain a balanced ICF and high yield research program. As such the Committee has reallocated funding out of NIF demonstration and Construction activities to ensure that there is adequate program balance." It recommended funding the campaign at $412.3 million and, within that sum, funding NIF construction at $81.4 million. The FY2007 Operating Plan included $489.7 million for this campaign, of which $111.4 million was for NIF construction.

Readiness in Technical Base and Facilities (RTBF)

This program provides infrastructure and operations at the nuclear weapons complex sites. The FY2006 appropriation was $1,644.8 million; the FY2007 request was $1,685.8 million; and the FY2007 Operating Plan included $1,613.2 million. RTBF has six subprograms. By far the largest is Operations of Facilities ($1,166.2 million appropriated for FY2006; $1,203.8 million requested for FY2007; and $1,150.1 million in the FY2007 Operating Plan). Others include Program Readiness, which supports activities occurring at multiple sites or in multiple programs ($104.7 million appropriated for FY2006; $75.2 million requested for FY2007; and $75.2 million in the FY2007 Operating Plan), and Material Recycle and Recovery, which recovers plutonium, enriched uranium, and tritium from weapons production and disassembly ($72.0 million appropriated for FY2006; $70.0 million requested for FY2007; and $70.0 million in the FY2007 Operating Plan). Construction is a separate category within RTBF; the FY2006 appropriation for that purpose was $259.9 million, the FY2007 request was $281.4 million, and the amount in the FY2007 Operating Plan was $262.5 million.

For FY2007, the House Appropriations Committee recommended reducing RTBF overall by $27.0 million from the request, including an increase of $73.0 million for Operations of Facilities and a reduction of $100.0 million, from a request of $112.4 million, for a Chemistry and Metallurgy Research Facility Replacement (CMRR). CMRR would replace a building about 50 years old at Los Alamos that, among other things, conducts research into plutonium and supports pit production at TA-55. The committee stated that CMRR construction should be terminated, DOE should revise its long-term plan for the Complex, and "[p]roduction capabilities proposed in the CMRR should be located at the future production site that supports the RRW and long term stockpile requirements." The committee noted that NNSA proposed to build a Consolidated Plutonium Production Center by 2022, so that "CMRR will serve its primary production support function for only eight years before it is made obsolete by the new plutonium facility." The House, in considering H.R. 5427, made no changes to these provisions. The Senate Appropriations Committee recommended $1,780.8 million for RTBF, including the amount requested for CMRR. It said, "The Committee firmly believes this facility [CMRR] will continue to play a central role in the plutonium mission at Los Alamos and is needed to support the research and chemistry mission of plutonium activities." The FY2007 Operating Plan included $1,613.2 million for RTBF, including $53.4 million for CMRR.

Other Programs

Weapons Activities includes four smaller programs in addition to DSW, Campaigns, and RTBF.

- Secure Transportation Asset provides for the transport of nuclear weapons, components, and materials safely and securely. It includes special vehicles used for this purpose, communications and other supporting infrastructure, and threat response. The appropriation for FY2006 was $210.0 million. The FY2007 request was $209.3 million. The House-passed bill provided that amount, the

Senate Appropriations Committee recommended that amount, and the FY2007 Operating Plan included $209.5 million.

- Nuclear Weapons Incident Response provides for use of DOE assets to manage and respond to a nuclear or radiological emergency within DOE, in the United States, or abroad. The FY2006 appropriation was $117.6 million. The FY2007 request was $135.4 million; the House-passed bill provided that amount, the Senate Appropriations Committee recommended that amount, and the FY2007 Operating Plan included $133.5 million.
- Facilities and Infrastructure Recapitalization Program (FIRP) provides for deferred maintenance and infrastructure improvements for the nuclear weapons complex. In contrast, RTBF "ensure[s] that facilities necessary for immediate programmatic workload activities are maintained sufficiently," according to NNSA. The FY2006 appropriation for FIRP was $149.4 million, and the FY2007 request was $291.2 million. The House Appropriations Committee recommended reducing the latter sum by $145.0 million, and "directs the NNSA to reassess its out-year planning for FIRP projects to ensure coordination between FIRP funds and the reduced facility requirements consistent with the consolidation of the complex under the long-term Responsive Infrastructure planning." H.R. 5427 as passed by the House left these provisions unchanged. The Senate Appropriations Committee made a number of increases and decreases to FIRP, mostly to construction projects, and recommended $283.2 million for the program. It said the funds were "to restore, rebuild, and revitalize the physical infrastructure of the nuclear weapons complex." The FY2007 Operating Plan included $169.4 million.
- Safeguards and Security provides operations and maintenance funds for physical and cyber security, and related construction, to protect NNSA personnel and assets from terrorist and other threats. Safeguards and Security is a major concern for NNSA. Ambassador Linton Brooks, then Administrator of NNSA, stated to the Senate Armed Services Committee on April 4, 2005, "We must now consider the distinct possibility of well-armed and competent terrorist suicide teams seeking to gain access to a warhead in order to detonate it in place. This has driven our site security posture from one of 'containment and recovery' of stolen warheads to one of 'denial of any access' to warheads. This change has dramatically increased security costs for 'gates, guns, guards' at our nuclear weapons sites." The FY2006 appropriation was $797.8 million. The FY2007 request was $754.4 million; the House Appropriations Committee recommended increasing this sum by $78.0 million, to $832.4 million, for various security upgrades. H.R. 5427 as passed by the House left these provisions unchanged. The Senate Appropriations Committee recommended $759.4 million for this program, adding $5.0 million for Sandia to conduct R&D on enhanced security measures "to reduce the overall security costs for the Complex." The FY2007 Operating Plan included $761.2 million.

Nonproliferation and National Security Programs

DOE's nonproliferation and national security programs provide technical capabilities to support U.S. efforts to prevent, detect, and counter the spread of nuclear weapons worldwide. These nonproliferation and national security programs are included in the National Nuclear Security Administration (NNSA).

Funding for these programs in FY2006 was $1.615 billion. For FY2007, the Administration requested $1.726 billion. The House Appropriations Committee recommended $1.593 billion.

Table 12. DOE Defense Nuclear Nonproliferation Programs

($ millions)

Program	FY2006	FY2007 Request	House	Senate	P.L. 110-5[a]
Nonproliferation & Verification R&D	$318.8	$268.9	$308.1	$282.9	*$262.4*
Nonproliferation & International Security	74.3	127.4[b]	127.4[b]	127.4[b]	*128.9*[b]
International Materials Protection, Control and Accounting (MPC&A)	422.7	413.2	583.2	427.2	472.7
Russian Transition Initiatives[c]	39.6	—[b]	—[b]	—[b]	—[b]
Elimination of Weapons-Grade Plutonium Production	174.4	206.7	206.7	—	*225.7*
HEU Transparency Implementation	19.3	—[b]	—[b]	—[b]	—[b]
Fissile Materials Disposition	468.8	603.3	248.0	618.4	*470.1*
Global Threat Reduction Initiative	97.0	106.8	147.6	116.8	115.5
Total	**1,614.8**	**1,726.2**	**1,620.9**	**1,572.7**	**1,683.3**

Sources: DOE FY2007 Congressional Budget Request; H.Rept. 109-474; S.Rept. 109-274; P.L. 110-5; DOE FY2007 Operating Plan.

Notes: Numbers may not add due to rounding.

a. Figures in italics are from DOE FY2007 Operating Plan; other figures are from P.L. 110-5.

b. Funding for Russian Transition Initiatives ($28.140 million) and HEU Transparency Implementation ($17.531 million) was included in Nonproliferation & International Security.

c. As it did last year, DOE proposes changing the program name to Global Initiatives for Proliferation Prevention. The final FY2006 appropriations bill kept the previous name, as shown in the table.

The Nonproliferation and Verification R&D program received $318.78 million for FY2006; for FY2007, the Administration requested $268.89 million. The House bill would have funded the activity at $308.1 million; the Senate Appropriations Committee recommended $282.9 million. DOE's FY2007 Operating Plan funds the activity at $262.4 million.

Nonproliferation and International Security programs include international safeguards, export controls, and treaties and agreements. They would have received $127.41 million in the FY2007 request, including the transfer of two previously independent programs, Russian Transition Initiatives and HEU Transparency Implementation. These three programs received $133.2 million in FY2006. The House bill and the Senate Appropriations Committee recommendation followed the Administration's request. The DOE Operating plan allots $128.9 million.

International Materials Protection, Control and Accounting (MPC&A), which is concerned with reducing the threat posed by unsecured Russian weapons and weapons-usable material, would have received $413.18 million under the President's request, compared with $422.73 million appropriated for FY2006. The House Appropriations Committee recommended $583.20 million, citing "expanded opportunities for high priority work" at two Russian sites, and that amount was in the bill as passed by the House. The Senate Appropriations Committee recommended $427.2 million. P.L. 110-5 specified $472.7 million for MPC&A.

Two programs in the former Soviet Union, Initiatives for Proliferation Prevention (IPP) and the Nuclear Cities Initiatives (NCI), were combined for FY2005 into a single program called "Russian Transition Initiative," aimed at finding nonweapons employment for roughly 35,000 underemployed nuclear scientists from the former Soviet weapons complex. The FY2006 appropriation for the program was $39.6 million. For FY2007, the program was included in Nonproliferation and International Security, with $28.14 million allotted for it in the request.

Requested funding for the Fissile Materials Disposition program for FY2006 was $653.1 million, but the Congress appropriated $468.8 million. The program's goal is disposal of U.S. surplus weapons plutonium by converting it into fuel for commercial power reactors, including construction of a facility to convert the plutonium to "mixed-oxide" (MOX) reactor fuel at Savannah River, South Carolina, and a similar program in Russia. The House Appropriations Committee cut funding for the Savannah River facility sharply, citing delays in agreement with Russia over the program. Total funding for fissile materials disposition in H.R. 2419 as passed by the House would have been $301.7 million. The Senate version of the bill would have funded the program at the requested $653.1 million level.

For FY2007, the Administration, noting that the issue that had delayed the program in Russia had been resolved, requested $603.3 million. However, the House Appropriations Committee report said "in 2006 it has become clear that the Russian government is not going to participate in the MOX-light water reactor" plan that the United States has proposed, and the House-passed version of H.R. 5427 would have cut the funding drastically to $248.0 million. The move would have shut down the MOX-fuel construction project at Savannah River.

The Senate Appropriations Committee likewise expressed disappointment that the Russian government was not pursuing its program to convert surplus weapons plutonium to MOX, but supported the continuation of the U.S. program to convert its own surplus weapons plutonium to MOX with continued construction of the facility at Savannah River. The Senate version of H.R. 5427 would have funded the Fissile Materials Disposition program at $618.4 million, $15 million more than requested by the Administration.

P.L. 110-5 specifies that the "Secretary of Energy may not make available any of the funds provided by this division or previous appropriations Acts for construction activities for Project 99-D-143, mixed oxide fuel fabrication facility, Savannah River Site, South Carolina, until August 1, 2007." DOE's FY2007 Operating Plan allocates $470.1 million for Fissile Materials Disposition, including $262.5 million for Project 99-D-143.

Environmental Management

The adequacy of funding to address human health and environmental risks resulting from the past production of nuclear weapons is a long-standing issue. DOE established the Office of Environmental Management in 1989 to consolidate its efforts to administer the cleanup of former nuclear weapons sites. These efforts include the disposal of radioactive and other hazardous wastes, management and disposal of surplus nuclear materials, the remediation of soil and groundwater contaminated from such wastes, and the decontamination and decommissioning of excess buildings and facilities. Through this program, DOE also administers the disposal of wastes and remediation of contamination at sites where the federal government conducted civilian nuclear energy research. Altogether, there were 114 "geographic"[5] sites in 30 states where these activities resulted in the generation of wastes and contamination.

[5] DOE makes a distinction between its "geographic" sites that represent entire facilities and the lands they occupy, and

Some of the ongoing issues associated with efforts to clean up contaminated sites have been the adequacy of risk-based approaches to cleanup, the technical soundness of waste treatment facility designs, how to safely remove, treat, and dispose of high-level radioactive waste stored in underground tanks,[6] the effectiveness and cost-savings of incentive-based cleanup contracts, and the pace and adequacy of cleanup overall. The challenges of the Environmental Management program to clean up nuclear waste and contamination are substantial and require significant resources. As such, this cleanup program is the second largest function within DOE (after the National Nuclear Security Administration), and represents approximately one-fourth of the Department's total budget.

FY2007 Appropriations

As indicated in the table below, DOE's FY2007 Operating Plan allocates $6.19 billion for the Environmental Management Program.[7] This funding level is more than the $5.83 billion that the President originally requested in February 2006, and more than the $5.99 billion the full House approved in passing H.R. 5427 in the 109th Congress and the $5.91 billion the Senate Appropriations Committee reported in its version of that bill. Although DOE's Operating Plan allocates an increase relative to the funding originally proposed for FY2007, it provides less funding for the program than the $6.59 billion that Congress appropriated for FY2006. Accounting for the use of prior year balances, DOE's plan indicates a larger amount of funding was allocated in FY2006 for the Defense Environmental Cleanup account, resulting in a greater decrease in FY2007 for the program when a comparison is made to FY2006 funding including the use of these balances. (See the notes to the table below.)

A substantial portion of the reduction in funding for the program relative to FY2006 is due to the completion of cleanup at "accelerated closure" sites, such as Rocky Flats in Colorado. Despite the overall decrease, DOE's plan allocates over $100 million more for closure activities at Rocky Flats than any of the original proposals for FY2007, and more than twice the original proposals for administration of closure sites. For sites where cleanup is not complete, there are varying decreases and increases in funding when comparing DOE's FY2007 Operating Plan to the President's FY2007 request, the FY2007 proposals considered in the 109th Congress, and the FY2006 appropriation. Sites with some of the larger differences in funding include those where substantial cleanup and waste disposal challenges remain, such as Hanford (WA) and Savannah River (SC), both of which store high-level radioactive waste in underground tanks. As required by the Nuclear Waste Policy Act, this waste must be removed for permanent disposal in a geologic repository.

The adequacy of funding to clean up Hanford has been particularly controversial for many reasons, including potential risks from radioactive contamination migrating through groundwater into the Columbia River, and the delayed construction of the Waste Treatment and Immobilization Plant. This facility is a key element in DOE's plans to treat the substantial volume of high-level radioactive waste to be removed from the underground tanks at Hanford, and to solidify that waste for permanent disposal in a geologic repository. This task is one of the more costly cleanup

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the thousands of discrete contaminated sites located on each facility that have been, or need to be, cleaned up. One of these geographic sites, the Waste Isolation Pilot Plant in New Mexico was constructed as a repository to dispose of transuranic radioactive waste from other sites. Although this facility is not a cleanup site, its operation is essential to the cleanup of transuranic waste at many sites where such waste is removed and prepared for permanent disposal off-site.

[6] See CRS Report RS21988, *Radioactive Tank Waste from the Past Production of Nuclear Weapons: Background and Issues for Congress*, by David M. Bearden and Anthony Andrews.

[7] The $6.19 billion total reflects a $452 million offset resulting from federal payment to the Uranium Enrichment Decontamination and Decommissioning Fund.

challenges across the complex of sites. Construction of the Waste Treatment and Immobilization Plant has been delayed as a result of various engineering and design issues. DOE's FY2007 Operating Plan allocates significantly more funding for the waste plant than appropriated in FY2006, but allocates less funding than in FY2006 for the management of the waste still stored in the underground tanks.

The table below indicates the FY2006 appropriation, the President's FY2007 request, the full House and Senate Appropriations Committee FY2007 funding proposals in the 109th Congress, and funding allocated in DOE's FY2007 Operating Plan. Amounts are indicated for each of the three statutory accounts that fund the Environmental Management program, and for selected sites and program activities within those accounts in which there has been broad congressional interest.

Table 13. Environmental Management Program Appropriations

($ millions)

Environmental Management Program Accounts	FY2006	FY2007			
		Request	House-Passed	Senate-Reported	DOE Op. Plan
Defense Environmental Cleanup					
Accelerated Closure Sites	$1,018.3	$320.9	$321.9	$320.9	$468.1
Ashtabula	$15.8	$0.3	$1.3	$0.3	$1.3
Columbus	$9.4	$0.0	$0.0	$0.0	$0.0
Fernald	$324.3	$258.9	$258.9	$258.9	$254.8
Miamisburg	$104.5	$34.9	$34.9	$34.9	$39.9
Rocky Flats	$564.3	$1.0	$1.0	$1.0	$115.5
Closure Sites Administration	$0.0	$25.9	$25.9	$25.9	$56.6
Hanford	$1,619.7	$1,768.8	$1,726.8	$1,768.8	$1,802.4
Richland Office	$772.8	$804.7	$832.7	$804.7	$835.3
Office of River Protection	$846.9	$964.1	$894.1	$964.1	$967.1
Waste Treatment Plant	*$520.7*	*$690.0*	*$600.0*	*$690.0*	*$690.0*
Tank Farm Activities	*$326.2*	*$274.1*	*$294.1*	*$274.1*	*$277.1*
Savannah River Site	$1,158.9	$1,084.4	$1,195.4	$1,084.4	$1,113.4
Idaho National Laboratory	$532.8	$512.6	$544.6	$512.6	$526.9
Oak Ridge Reservation	$238.4	$159.9	$199.4	$179.2	$203.9
Waste Isolation Pilot Plant	$228.3	$213.3	$213.3	$232.3	$228.8
NNSA and Nevada Off-Sites	$299.4	$232.1	$232.1	$282.5	$306.5
Technology Development	$29.8	$21.4	$31.4	$21.4	$21.4
Safeguards and Security	$284.4	$295.8	$295.8	$295.8	$275.9
Program Direction	$241.4	$291.2	$301.2	$291.2	$294.5
Program Support	$32.5	$37.9	$37.9	$37.9	$38.0
Federal Payment to Uranium Enrichment D&D Fund[a]	$446.5	$452.0	$452.0	$452.0	$452.0

Environmental Management Program Accounts	FY2006	FY2007 Request	FY2007 House-Passed	FY2007 Senate-Reported	FY2007 DOE Op. Plan
Total Defense Environmental Cleanup[bc]	$6,130.4	$5,390.3	$5,551.8	$5,479.1	$5,731.8
Non-Defense Environmental Cleanup	$349.7	$310.4	$309.9	$310.4	$349.7
Uranium Enrichment D&D Fund[a]	$556.6	$579.4	$579.4	$573.4	$556.6
Uranium Enrichment D&D Fund Offset[a]	$-446.5	$-452.0	$-452.0	$-452.0	$-452.0
Total Environmental Management	$6,590.2	$5,828.1	$5,989.1	$5,910.9	$6,186.1

Source: Prepared by the Congressional Research Service with information from the following sources: FY2006 enacted, FY2007 request, FY2007 House-passed, and FY2007 Senate-reported amounts are from the Senate Appropriations Committee report on the FY2007 appropriations bill in the 109th Congress (H.R. 5427, S.Rept. 109-274).

DOE's FY2007 Operating Plan specifies funding allocated for the above program activities with authorities provided in the Revised Continuing Appropriations Resolution for FY2007 (P.L. 110-5).

a. D&D = Decontamination and Decommissioning. Federal payment to the Uranium Enrichment D&D Fund is typically treated as an offset to the total for the Environmental Management Program.

b. DOE's FY2007 Operating Plan indicated a total appropriation of $6,316,047,000 for the Defense Environmental Cleanup account in FY2006, including $166,318,000 in prior year balances and $20,000,000 from the FY2005 "uncosted" balance for the Salt Waste Processing Facility at the Savannah River site. The FY2006 amounts for individual sites indicated in DOE's FY2007 Operating Plan include the distribution of these carried over balances, and as a result, some FY2006 amounts for individual sites in DOE's plan are more than the Senate Appropriations Committee reported in the 109th Congress, and as are depicted in the above table.

c. P.L. 110-5 provided a total of $5,730,448,000 for the Defense Environmental Cleanup account. DOE allocated $5,731,839,000 for this account in its FY2007 Operating Plan, but did not explain the difference from the statutory appropriation provided in P.L. 110-5.

Estimated Future Funding Needs

The need for annual appropriations of several billion dollars to clean up nuclear waste sites has motivated ongoing concern within Congress about the long-term financial liability of the United States to meet these needs. Accordingly, there has been much debate about how to ensure public health and safety, and the protection of the environment, in the most expedient and cost-effective manner. DOE reports that it had cleaned up 81 of the 114 geographic sites as of the end of FY2006.[8] Although DOE has disposed of substantial quantities of waste and remediated many areas of contamination at the remaining sites, much work remains to be done to complete cleanup at many of them. DOE expects to complete cleanup at certain sites within the next few years. However, the Department anticipates cleanup to continue for decades at the larger and more complex sites, such as Hanford, Savannah River, and the Idaho National Laboratory, where high-level radioactive waste is in need of treatment and disposal, and soil and groundwater

[8] DOE. Office of the Chief Financial Officer. FY2008 Congressional Budget Request. Volume 5, Environmental Management. p. 31. DOE referenced 108 geographic sites, as it excluded six Nevada off-sites proposed for transfer to the Office of Legacy Management. The total of 114 geographic sites noted above includes these six sites.

contamination is generally more severe. Based on recent assumptions, DOE expects cleanup and disposal of wastes to be complete at Savannah River in 2031, at the Idaho National Laboratory in 2035, and at Hanford in 2042.[9]

Accurately assessing the time and funding needed to complete cleanup and dispose of all radioactive and other hazardous wastes is difficult at best. Developing reliable estimates is especially challenging for the larger, more complex sites where many final decisions have yet to be made because of technical limitations and uncertainties, such as the "end state"[10] of many sites. DOE periodically revises its estimates of outstanding costs to complete cleanup and dispose of wastes as individual project baselines and assumptions change. These estimates have varied widely over time by many billions of dollars. DOE reports its financial liabilities for the Environmental Management Program, and all of its other program responsibilities, in its annual financial statements contained in the department's performance and accountability reports. DOE's *Performance and Accountability Report for FY200*6 estimated that, as of the end of FY2006, $159 billion would be needed to complete cleanup and dispose of wastes at the remaining sites administered under DOE's Environmental Management Program.[11] The $159 billion estimate is not adjusted for inflation and is in FY2006 dollars.

In addition to inflation, other factors could cause actual costs to exceed the $159 billion estimate. For example, actual costs could be higher than expected, depending on whether federal and state regulators may require more stringent and costlier cleanup actions than DOE plans to take. Costs also could rise if initial cleanup actions prove inadequate to protect human health and the environment over the long-term. Future performance of cleanup actions is especially critical for nuclear waste sites because of the rate of decay of radioactivity, which can be thousands of years depending on the particular radionuclide. Predicting the effectiveness of methods to contain radioactive wastes over such long periods of time is challenging, if not impracticable in some cases. Consequently, additional funding could be needed at sites where cleanup was thought to be complete, if the initial cleanup proves inadequate over time.

DOE's $159 billion estimate also does not include the costs of long-term care of sites once cleanup remedies are in place to ensure the protection of human health and the environment into the future. DOE's *Performance and Accountability Report for FY2006*, estimated that, as of the end of FY2006, $18 billion would be needed for cleanup and post-closure site responsibilities after work under the Environmental Management program is completed.[12] These responsibilities include surveillance and monitoring, long-term operation and maintenance of soil and groundwater cleanup remedies, and disposal of excess materials remaining on-site after closeout under the Environmental Management Program. DOE estimated that this $18 billion cost would be incurred over 75 years through FY2081.[13] DOE expects some long-term site care to be needed

[9] Ibid., p. 40. Two separate offices within the Environmental Management Program administer cleanup and disposal of wastes at Hanford: the Richland Office and the Office of River Protection. The projected completion date for activities of the Richland Office is 2035, and the projected completion date for activities of the Office of River Protection (ORP) is 2042. The primary purpose of the ORP is to remove, treat, and dispose of high-level radioactive waste stored in underground tanks near the Columbia River.

[10] DOE uses the term "end state" to denote the intended condition or land use of a contaminated site once cleanup is complete. Determining the end state is critical to making cleanup decisions, as the degree of cleanup required, and the specific action to achieve that degree of cleanup, are dependent on the potential pathways of human exposure that would occur as a result of how the land will be used in the future. Land uses resulting in greater potential for human exposure generally require a greater degree of cleanup.

[11] DOE. *Performance and Accountability Report for FY2006*. pp. 173-175.

[12] Ibid.

[13] Ibid.

beyond this time, requiring additional funding. However, the Department "believes" that costs beyond 75 years cannot "reasonably" be estimated because of uncertainties inherent to such distant time frames.[14] Current administration and FY2007 funding for long-term site care is discussed below.

Long-Term Site Care

Once a site is cleaned up and there is no continuing DOE mission, responsibility for long-term care of the site is transferred to DOE's Office of Legacy Management.[15] This office also manages the payment of pensions and post-retirement benefits of former contractor personnel who worked at these sites.[16] DOE's FY2007 Operating Plan allocates $64 million for the Office of Legacy Management, including both defense and non-defense accounts. This amount is less than the FY2006 appropriation of $78 million, and is substantially less than the $201 million that the President requested for FY2007 in February 2006, and the full House and the Senate Appropriations Committee proposed in the 109th Congress in their respective versions of H.R. 5427.

The majority of the originally proposed increase above FY2006 was intended to support the payment of pensions and post-retirement benefits associated with sites expected to be cleaned up and transferred to this office. Of the originally proposed increase, $20 million was intended for site care related to long-term cleanup responsibilities, including surveillance and monitoring at Rocky Flats, Fernald, Columbus, and certain Nevada "off-sites." How the funding reduction in DOE's plan would affect these site responsibilities is unclear. However, Rocky Flats did receive continued funding within the Environmental Management Program at a level that is over $100 million more than originally proposed for FY2007. More than double the funding than originally proposed was provided for continued administration of closure sites, such as Rocky Flats, within that program as well.

Table 14. Office of Legacy Management Appropriations

($ millions)

		FY2007			
Type of Site	**FY2006**	**Request**	**House Passed**	**Senate-Reported**	**DOE Op. Plan**
Defense	$44.6	$167.9	$167.9	$167.9	$30.9
Non-Defense	$33.2	$33.1	$33.1	$33.1	$33.2
Total	$77.8	$201.0	$201.0	$201.0	$64.1

Source: Prepared by the Congressional Research Service with information from the following sources:

FY2006 enacted, FY2007 request, FY2007 House-passed, and FY2007 Senate-reported amounts are from the Senate Appropriations Committee report on the FY2007 appropriations bill in the 109th Congress (H.R. 5427, S.Rept. 109-274).

[14] Ibid.

[15] When there is a continuing mission, long-term site care is transferred to the program office within DOE that is responsible for administering that mission or is the "landlord" of the site.

[16] Likewise, at sites with a continuing mission, payment of pensions and post-retirement benefits is assigned to the program office within DOE that is responsible for administering that mission or is the "landlord" of the site, rather than the Office of Legacy Management.

DOE's FY2007 Operating Plan specifies funding allocated for the above program activities with authorities provided in the Revised Continuing Appropriations Resolution for FY2007 (P.L. 110-5).

Power Marketing Administrations

DOE's four Power Marketing Administrations (PMAs)—Bonneville Power Administration (BPA), Southeastern Power Administration (SEPA), Southwestern Power Administration (SWPA), and Western Area Power Administration (WAPA)—were established in response to the construction of dams and multipurpose water projects operated by the Bureau of Reclamation and the Army Corps of Engineers. In many cases, conservation and management of water resources—including irrigation, flood control, recreation or other objectives—were the primary purpose of federal projects. However, these facilities often generated electricity to meet project needs; PMAs were established to market the excess power. (For more information, see CRS Report RS22564, *Power Marketing Administrations: Background and Current Issues*, by Nic Lane.)

Priority for PMA power is extended to "preference customers," which include municipal utilities, co-ops, and other "public" bodies. The PMAs sell power to these entities "at the lowest possible rates" consistent with what they describe as "sound business practice." The PMAs are responsible for covering their expenses and for repaying debt and the federal investment in the generating facilities. Their rates are the focus of considerable discussion, and in its FY2006 budget request, the Administration recommended that Congress raise PMA rates to "market rates." The House rejected this proposal in its Energy and Water appropriations bill. It was not mentioned in the conference report, and no related legislation was introduced in the 109th Congress. (For more information, see CRS Report RL32798, *Power Marketing Administrations: Proposals for Market-Based Rates*, by Kyna Powers.)

The Administration's net FY2007 request for the PMAs of $249.5 million was a reduction of 6.6% from the FY2006 appropriation of $267.1 million. This reflected a reduction of $19.4 million for WAPA, with slight increases of $1.7 million for Southwestern and $180,000 for Southeastern. The House and Senate Appropriations Committees recommended funding for the PMAs as requested, with an FY2007 allocation of $252.0 million (this included $2.5 million for the Falcon and Amistad O&M fund). DOE's FY2007 Operating Plan indicates a net outlay of $247.6 million for the PMAs.

The House Appropriations Committee did not support the Administration's proposals to recover O&M expenses for WAPA, SEPA, and SWPA through offsetting collections, or to increase PMA rates to reflect market-based rates. Nor did the committee incorporate the Administration's proposal to directly fund Corps hydropower O&M expenses through the revenues of WAPA, SEPA, and SWPA.

In FY2007 WAPA, SEPA, and SWPA proposed to assign "Agency Rates" to new obligations. The Agency Rate is the rate at which federal corporations and BPA borrow. This change was expected to have a rate impact of less than 1% (the Agency Rate was 0.4% higher on average than PMA rates from 1997-2005) and to generate $11.8 million in additional Treasury revenue from 2007 to 2011. The Senate Appropriations Committee rejected this proposal in S.Rept. 109-274, §312.

BPA receives no annual appropriation, but funds some of its activities from permanent borrowing authority, which was increased in FY2003 from $3.75 billion to $4.45 billion (a $700 million increase). DOE's 2007 Operating Plan indicates that BPA intends to use $305 million of its borrowing authority during the remainder of FY2007.

Beginning in FY2007 BPA was proposing to use secondary net revenues beyond $500 million to make advance amortization payments to the Treasury on BPA's bond obligations. BPA is

expecting this additional revenue to be $169 million in FY2007. P.L. 109-234, §2308 prevents this use of BPA revenue.

Title IV: Independent Agencies

Independent agencies that receive funding from the Energy and Water Development bill include the Nuclear Regulatory Commission (NRC), the Appalachian Regional Commission (ARC), and the Denali Commission.

Table 15. Energy and Water Development Appropriations
Title IV: Independent Agencies

($ millions)

Program	FY2006	FY2007 Request	House	Senate	P.L. 110-5
Appalachian Regional Commission	$65.0	$65.0	$35.5	$65.5	$65.0
Nuclear Regulatory Commission	735.2	776.6	816.6	816.6	821.6
(Revenues)	(618.4)	(627.7)	(663.7)	(663.7)	(667.4)
Net NRC	116.8	148.9	152.9	152.9	154.2
Defense Nuclear Facilities Safety Board	21.8	22.3	22.3	22.3	21.8
Nuclear Waste Technical Review Board	3.6	3.7	3.7	3.7	3.6
Denali Commission	49.5	2.5	7.5	50.0	49.5
Delta Regional Authority	11.9	5.9	5.9	12.0	11.9
Total	**268.4**	**248.8**	**227.8**	**306.3**	**306.0**

Source: FY2007 Budget Request; H.Rept. 109-474.

Key Policy Issues—Independent Agencies

Nuclear Regulatory Commission

The Nuclear Regulatory Commission (NRC) requested a total budget of $776.6 million for FY2007, including $8.1 million for the NRC inspector general's office. The request was 4.5% above the FY2006 appropriation of $741.5 million. Major activities conducted by NRC include safety regulation and licensing of commercial nuclear reactors, licensing of nuclear waste facilities, and oversight of nuclear materials users.

The NRC budget request included a $22 million increase in the Nuclear Reactor Safety program, largely to handle anticipated new nuclear power plant license applications. No commercial reactor license applications have been submitted to NRC since the 1970s, but higher fossil fuel prices and incentives provided by the Energy Policy Act of 2005 (P.L. 109-58) have prompted electric utilities to announce plans for more than a dozen reactor license applications over the next few years. The House and the Senate Appropriations Committee approved a further increase of $40 million for reactor licensing, with the Senate panel designating $2 million of the increase for oversight of spent fuel recycling under GNEP. The continuing resolution provides $821.6 million for NRC in FY2007, including the inspector general's office.

NRC's proposed budget included a 10% reduction, to $41.0 million, for licensing DOE's planned Yucca Mountain nuclear waste repository, reflecting delays in the program. The budget request assumed that DOE would submit a repository license application in FY2008.

For all homeland security activities, NRC's FY2007 budget request included $70.3 million, an 11% decrease from FY2006. NRC oversees force-on-force security exercises at nuclear plants and is requiring revised reactor security plans to reflect increased baseline threats. (For more information on protecting licensed nuclear facilities, see CRS Report RS21131, *Nuclear Power Plants: Vulnerability to Terrorist Attack*, by Mark Holt and Anthony Andrews.)

The Energy Policy Act of 2005 permanently extended a requirement that 90% of NRC's budget be offset by fees on licensees. Not subject to the offset are $45.7 million from the Nuclear Waste Fund to pay for waste repository licensing, spending on generic homeland security, and DOE defense waste oversight. The continuing resolution specifies that the offsets must result in a net appropriation of not more than $154.2 million.

For Additional Reading

CRS Products

CRS Report RL31975, *CALFED Bay-Delta Program: Overview of Institutional and Water Use Issues*, by Pervaze A. Sheikh and Betsy A. Cody.

CRS Report RL33461, *Civilian Nuclear Waste Disposal*, by Mark Holt.

CRS Report RS20866, *The Civil Works Program of the Army Corps of Engineers: A Primer*, by Nicole T. Carter and Betsy A. Cody.

CRS Report RL33294, *DOE Budget Earmarks: A Selective Look at Energy Efficiency and Renewable Energy R&D Programs*, by Fred Sissine.

CRS Report RL33599, *Energy Efficiency Policy: Budget, Electricity Conservation, and Fuel Conservation Issues*, by Fred Sissine.

CRS Report RL32543, *Energy Savings Performance Contracts: Reauthorization Issues*, by Anthony Andrews.

CRS Report RS21331, *Everglades Restoration: Modified Water Deliveries Project*, by Pervaze A. Sheikh.

CRS Report RL30478, *Federally Supported Water Supply and Wastewater Treatment Programs*, coordinated by Claudia Copeland.

CRS Report RL33298, *FY2006 Supplemental Appropriations: Iraq and Other International Activities; Additional Hurricane Katrina Relief*, by Paul M. Irwin et al.

CRS Report RS21442, *Hydrogen and Fuel Cell Vehicle R&D: FreedomCAR and the President's Hydrogen Fuel Initiative*, by Brent D. Yacobucci.

CRS Report RL31098, *Klamath River Basin Issues: An Overview of Water Use Conflicts*, by Betsy A. Cody, Pamela Baldwin, and Eugene H. Buck.

CRS Report RL33558, *Nuclear Energy Policy*, by Mark Holt.

CRS Report RS21131, *Nuclear Power Plants: Vulnerability to Terrorist Attack*, by Mark Holt and Anthony Andrews.

CRS Report RL31993, *Nuclear Warhead "Pit" Production: Background and Issues for Congress*, by Jonathan Medalia.

CRS Report RL32130, *Nuclear Weapon Initiatives: Low-Yield R&D, Advanced Concepts, Earth Penetrators, Test Readiness*, by Jonathan Medalia.

CRS Report RL32131, *Phosphorus Mitigation in the Everglades*, by Pervaze A. Sheikh and Barbara A. Johnson.

CRS Report RL32798, *Power Marketing Administrations: Proposals for Market-Based Rates*, by Kyna Powers.

CRS Report RL32163, *Radioactive Waste Streams: Waste Classification for Disposal*, by Anthony Andrews.

CRS Report RL33588, *Renewable Energy Policy: Tax Credit, Budget, and Regulatory Issues*, by Fred Sissine.

CRS Report RL32347, *"Bunker Busters": Robust Nuclear Earth Penetrator Issues, FY2005-FY2007*, by Jonathan Medalia.

CRS Report RL32189, *Terrorism and Security Issues Facing the Water Infrastructure Sector*, by Claudia Copeland.

CRS Report RS20569, *Water Resource Issues in the 110th Congress*, by Betsy A. Cody and H. Steven Hughes

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Division abbreviations: RSI = Resources, Science, and Industry; FDT= Foreign Affairs, Defense, and Trade.

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